HISPANIC TEACHERS' PERCEPTIONS

OF CHILDREN WITH ADHD

A Dissertation

by

NOE RAMOS JR.

Submitted to the Office of Graduate Studies of
Texas A&M University
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

August 2008

Major Subject: School Psychology

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ABSTRACT

Hispanic Teachers' Perceptions of Children with ADHD. (August 2008)

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Dr. Michael J. Ash

A vast number of children, approximating nearly 4 million, have received a diagnosis of ADHD. It is important that teachers are well educated with regard to the symptomatology of this particular disability. This is particularly important since teachers are expected to implement, evaluate, and support treatments for children with ADHD. Research has shown that the education system has not responded well to the needs of culturally and linguistically diverse students. Overall, ethnic minorities with ADHD have been understudied. Given the lack of information in the literature regarding the influence of ethnicity on Hispanic teacher perceptions as they pertain to inaccurate referrals for special education in children suspected of having ADHD, the purpose of this study was to examine Hispanic teacher perceptions of off-task behaviors and to investigate what factors influence teachers' decisions to refer these children to special education.

This study addresses three research questions that examine variables such as a teacher's perceived comfort level of their own knowledge of ADHD, a teacher's actual knowledge of ADHD, and the ethnicity of the student being considered for a special education referral. A series of repeated measures were conducted to answer these research questions. The first question involved determining the effects of an inservice training specifically dealing with ADHD on the comfort level of teachers' knowledge of

ADHD. There was a significant within-subjects effect for the variable time ($F = 11.054$; $p < .01$). The second research question involved determining the effects of an inservice training specifically dealing with ADHD on the actual teacher knowledge of ADHD. There was a significant within-subjects effect for both the variable time ($F = 21.465$; $p < .01$) and the interaction of the variable time and experimental condition ($F = 14.137$; $p < .01$). There also was a significant between subjects main effect found for the experimental condition ($F = 10.015$; $p < .01$). The third and last research question involved determining the effects of an inservice training specifically dealing with ADHD on teacher referral patterns of Hispanic and Caucasian students to special education. There were no significant within-subjects or between-subjects main and interaction effects.

DEDICATION

No solo puedo dedicar este proyecto/trabajo y/o logro a una sola persona. Dedico mi educación entera a mi papá, Noe Ramos Alanis (Nore), y a mi mamá, Modesta Ramos (Mole).

Mi papá, en su manera muy especial, ha puesto aún más valor en mi educación de la que yo mismo le he puesto a veces. El siempre me ha demostrado su apoyo a través de pequeñas acciones, que sin ellas, no podría haber llegado a hasta este punto de mi vida. El siempre ha puesto el bienestar y la educación de su familia sobre si mismo y sobre su propio sufrimiento. Es decir, aún cuando él necesitaba ayuda fuera de la casa, el nunca la acepto mientras yo tuviera tarea/proyectos/ensayos/trabajos que completar. Desde que tengo memoria hasta la realización de este proyecto, el siempre ha actuado de la misma manera. Aunque no digas mucho, yo se lo orgulloso que estas de mi. Gracias papá, solo puedo esperar ser tan buen padre como tu lo has sido cuando yo tenga mi propia familia.

Mi mamá, en su manera muy especial, siempre supo las palabras exactas que decir para alentarme cuando estaba pasando por momentos difíciles aunque yo jamás se lo dijera. Su bondad, instinto maternal y su manera de prever las cosas, que a veces hasta miedo dan, ya que siempre es tan acertada. Gracias por haber fomentado miedo en mí de pequeño y por haberte convertido en mi amiga conforme fui madurando. Una desilusión en tus ojos es el peor de los sentimientos, espero nunca ser la causa de ello. Gracias mamá, solo puedo desear ser tan bueno e intuitivo con mis hijos algún día.

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Without Brandi, I would have been lost – you know my inner-workings, my drives, my abilities as well as my flaws, you are my best friend. I will always love you.

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To OPRUS and all the children we will help and all the systems that we will change for the better.

I would not only like to acknowledge my entire family for always being there for me when I needed anything but apologize for all the time that was lost, all the family events that I missed, and all the fun times in between that I only wished I could have been present at throughout these past four years.

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CHAPTER I

INTRODUCTION

According to Bussing, Zima, Thomas, & Belin (1998), ADHD is the most common psychiatric diagnosis in the United States. A vast number of children, approximating nearly 4 million, have received this diagnosis (Morantz, 2006). The education that these children receive is negatively impacted by their disorder with many of them experiencing academic under-achievement and/or emotional difficulties (Barkley, 1990; Taylor & Larson, 1998). Research suggests that the symptoms that are characteristic of this disorder continue well into adulthood and could result in significant problems such as job loss (APA, 2000; Gingerich, Turnock, Litfin, & Rosen, 1998). Research reviewing the academic history of adults with ADHD indicates that adults with ADHD had lower grades when they were in school, failed more courses, were retained more often, were more likely to have dropped-out of school, and were generally less well educated than their non-ADHD counterparts (Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1993; Mannuzza, Klein, Bessler, Malloy, & LaPadula, 1998; Weiss & Hechtman, 1993; Barkley, Fischer, Smallish, & Fletcher 2006). The trajectories for children seem to be dim since many of them will be plagued by low SES and underemployment (Root & Resnick, 2003).

A number of federal statutes were enacted by the federal government to change the trajectories of many children with disabilities, including those with ADHD. Three

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This dissertation follows the style of *Journal of School Psychology.*

laws have created avenues for change in the lives of these children: Section 504 of the Rehabilitation Act of 1973 (Section 504), the Americans with Disabilities Act of 1990 (ADA), and Part B of the Individuals with Disabilities Education Improvement Act (IDEIA) of 2004. This last statute is of particular importance for children with ADHD since it is through this law that children are guaranteed a Free and Public Education in addition to access to special education in the least restrictive environment (IDEIA, 2004). Not all children with ADHD are eligible for protection under this law. An academic need must be present along with evidence of the disabling condition. However, children with ADHD usually are served under the category of Other Health Impairment; one of the thirteen disability categories covered under IDEIA (2004). Following the national initiative to address the needs of children with disabilities, states also have taken the responsibility to safeguard the future of children with ADHD (Gregg, 2000).

One critical component in the school accountability process is its Child Find process which is found in Part C of IDEIA 2004. According to Part C of the Individuals with Disabilities Education Improvement Act (2004), schools are responsible for identifying, locating, and evaluating all children who may evidence a potential disability and subsequently, are in need of early intervention or special education services. The identification of students with disabilities in the school system usually begins with teachers noticing some sort of academic, behavioral, or emotional difficulty that prevents the student from making the expected educational gains (Gottlieb, Gottlieb, & Trongone, 1991). Teachers and other school personnel that work with the student on a daily basis oftentimes are the main identifiers of children with academic needs. Thus, teachers

typically initiate the special education referral process (Frankenberger, Lozar, & Dallas, 1990; Lloyd, Kaufmann, Landrum, & Roe, 1991; Gottlieb et. al., 1991). Snider, Frankenberger, and Aspensen (2000) found that initial referrals are made by teachers approximately 40% of the time. So, it is at this stage in the implementation of IDEIA that misidentification of students with disabilities takes place since there are a number of factors that either influence and/or bias their judgment in the referral process (Shinn, Tindal & Spira, 1987; Drabman, Tarnowski, & Kelly, 1987; Tranowsky, Anderson, Drabman, & Kelly, 1990).

One factor that seems to influence a teacher's decision to refer a child for special education is the manifestation of externalizing behavior. Studies conducted by Greene, Clopton, and Pope (1996) as well as by Lloyd et al. (1991) indicate that teachers are more likely to refer students with externalizing behavior problems than those with internalizing behavior problems. Research also suggests that gender may play a part in a teacher's decision to refer a student. Boys exhibit more disruptive symptoms than girls, and thus, have a higher probability of being referred (Sciutto, Nolfi, & Bluhm, 2004; Biederman, et al., 2002). Wisniewski, Andrews, & Mulick (1995) also have found physical appearance to influence teacher perceptions with regard to referrals. Their research concluded that teachers were more likely to refer students as a child's height and weight increased in as compared to their perception of what an average student should look like (Wisniewski, et al., 1995).

Self-Efficacy also seems to be a critical variable influencing a teacher's decision to refer a child for special education. Podell and Soodak (1993) indicate that teachers

with low self-efficacy were less likely to consider the general education classroom as being appropriate for children suspected of having ADHD. Therefore, teachers with low self-efficacy may be more likely to refer a student for special education. A student's socio-economic status (SES) also seems to play a role in the referral process. Research conducted by Lichtenstein and Ireton (1984) indicates that there is an overrepresentation of children with low socio-economic backgrounds in special education. Given the number of factors that have a direct impact on the referral process, teacher knowledge about the etiology, diagnostic criteria, and expected trajectories of students with ADHD becomes paramount in order to offset the inappropriate referrals that take place when faulty judgment is used (Shapiro & DuPaul, 1993).

Cultural and linguistic factors also seem to increase the referral rate of students suspected of having ADHD. Research has shown that there is a disproportional amount of students from culturally and linguistically diverse backgrounds in special education (Artiles & Trent, 1994; Gottlieb, Alter, Gottlieb, & Wishner, 1994; Grossman, 1995). In a meta-analysis conducted by Hosp and Reschly (2003), they found that the referral rate was greater for both African-Americans and Hispanics. Studies conducted by Ortiz (1988) and Figueroa (1989) indicate that students with limited English proficiency are over-referred for special education. However, research also exists that has found conflicting results and indicates that they may be under-referred (Campbell, Gersten, & Kolar, 1993).

Teacher ethnicity is another contributing factor in the referral process. Teachers tend to perceive a specific behavior as being different when the student's ethnicity was

different from that of the teacher and may be problematic for minority students since the majority of teachers in the United States are Caucasian (Carlson & Stephens, 1986; Mehan, Hertweck, & Meihls, 1986; U.S. Department of Education, 1998). Overall, it seems that children who have culturally and linguistically diverse backgrounds have a higher risk of being referred for special education services.

Professional organizations such as The American Psychological Association (APA) and the National Association of School Psychologists (NASP) have postulated standards for psychologists that encourage specific practices when working with students who are culturally and linguistically diverse. These standards also reflect and coincide with federal laws such as the Individual with Disabilities Education Improvement Act (IDEIA). Specifically, Standard 8 of APA as well as Domain II(b) and II(c) from NASP stress the importance for school psychologists to be proactive in safeguarding the well-being of children with culturally and linguistically diverse backgrounds.

School psychologists can educate teachers and other school personnel about ADHD and their corresponding roles in documenting the observable characteristics that are often associated with such a diagnosis. Given the high number of referrals, it is important to examine which behaviors or behavior clusters are likely to be misperceived as potential ADHD so that teachers can be educated on these fallacies.

Significance of the Study

There is paucity in the research literature regarding the influence of student and teacher ethnicity on teacher perceptions as they pertain to inaccurate referrals for special

education in Hispanic children suspected of having ADHD. Given this lack of available information, the purpose of this study is to examine Hispanic teachers' perceptions of off-task behaviors and to investigate what factors influence teachers' decisions to refer these children to special education. In order to do so, it will be important to determine how knowledgeable Hispanic teachers are with respect to ADHD and to ask them to make evaluative judgments about scenarios regarding students that present behaviors commonly seen in classroom. One of the objectives of this study is to ascertain whether teachers' level of perceived knowledge of ADHD changes after being presented with information on this disorder. A second objective of this study is to evaluate if teachers' actual knowledge about ADHD changes before and after being presented with information on the disorder. The third objective of this study is to ascertain whether there is a change in the referral rates of teachers before and after being presented with information on ADHD. As part of this objective, this study will explore if Hispanic children are more likely to be referred for special education services than their Caucasian counterparts. This study will assist school psychologists and other school personnel in obtaining a better understanding of teacher perceptions about children with ADHD within the Hispanic culture. The information yielded by this study also may be useful in reducing the high number of referrals made by teachers within the school system. The research questions for the study are located below for the convenience of the reader. The expected outcomes and results for these research questions are located in chapters III and IV, respectively.

Research Questions

1. Does a teachers' perceived comfort level about their knowledge of ADHD change significantly in Hispanic teachers after being provided with an inservice on the disorder?
2. Does the knowledge level about ADHD as measured by the total score in the KADDS change significantly in Hispanic teachers after being provided with an inservice on the disorder?
3. Is there a change in referral patterns after inservice training?

Glossary of Terms

Americans with Disabilities Act	The Americans with Disabilities Act of 1990 (ADA) is the short title of United States Public Law 101-336. It affords similar protections against discrimination to Americans with disabilities as the Civil Rights Act of 1964, which made discrimination based on race, religion, sex, national origin, and other characteristics illegal. ADA prohibits discrimination on the basis of disability by state and local governmental entities, including public school districts.
Attention Deficit Hyperactivity Disorder	Attention-deficit/hyperactivity disorder (ADHD) is thought to be a neurological disorder, always present from childhood, which manifests itself with symptoms such as hyperactivity, forgetfulness, poor impulse control, and distractibility.
Conduct Disorder	Conduct disorder is a pattern of repetitive behavior where the rights of others or the social norms are violated. Possible symptoms are over-aggressive behavior, bullying, physical aggression, cruel behavior toward people and pets, destructive behavior, lying, truancy, vandalism, and stealing.
Culturally and Linguistically Diverse	Culturally and Linguistically Diverse means belonging to any minority group whose culture and language are outside of the mainstream culture.
Emotional Disturbance	Emotional Disturbance means a condition exhibiting one or more of the following characteristics over a long period of time and to a marked degree that adversely affects a child's educational performance.

Free and Appropriate Public Education	The term 'free appropriate public education' means special education and related services that– (A) have been provided at public expense, under public supervision and direction, and without charge; (B) meet the standards of the State educational agency; (C) include an appropriate preschool, elementary school, or secondary school education in the State involved; and (D) are provided in conformity with the individualized education program required under section 1414(d) of IDEIA (2004).
Individuals with Disabilities Education Improvement Act	The Individuals with Disabilities Education Improvement Act (IDEIA) is a United States federal law, 20 U.S.C. § 1400 *et seq.*, most recently amended in 2004, meant to ensure "a free appropriate public education" for students with disabilities, designed to their individualized needs in the Least Restrictive Environment. The act requires that public schools provide necessary learning aids, testing modifications and other educational accommodations to children with disabilities.
Individualized Educational Program	A mandated requirement of the Individuals with Disabilities Education Improvement Act (IDEIA). An IEP is required for any pupil in the public schools who is found to meet the federal or state requirements for special education and related services. An IEP is a written description of an appropriate instructional program for a student with special needs
Inappropriate Referral	A referral that has been made for subjective reasons other than that of detecting a disability in a student who has educational need and/or need for special education.

Inservice	An Inservice Program is a professional lecture, where professionals discuss research and cases involving their work for others in their peer group.
Knowledge of ADHD	Understanding the behaviors exhibited by a student with ADHD, understanding the treatment for ADHD generally and specifically, and other general information regarding ADHD, as well as understanding educational interventions for children with ADHD.
Minority	A minority or subordinate group is a sociological group that does not constitute a politically dominant plurality of the total population of a given society. It may include any group that is disadvantaged with respect to a dominant group in terms of social status, education, employment, wealth and political power.
Oppositional Defiant Disorder	Oppositional Defiant Disorder (ODD) is a theory proposed to explain an ongoing pattern of disobedient, hostile, and defiant behavior toward authority figures that goes beyond the bounds of normal childhood behavior.
Other Heath Impairment	Other Health Impairment means having limited strength, vitality or alertness, including a heightened alertness to environmental stimuli, that results in limited alertness with respect to the educational environment that is due to chronic or acute health problems, such as asthma, attention deficit disorder or attention deficit hyperactivity disorder, diabetes, epilepsy, a heart condition, hemophilia, lead poisoning, leukemia, nephritis, rheumatic fever, and sickle cell anemia, and adversely affects a child's educational performance.

Overrepresentation	Overrepresentation occurs when a student is placed in special education without having a disability.
Section 504	Section 504 is one of three laws that addresses the rights of children with disabilities to receive a free and appropriate education (FAPE). Section 504 is a condition to the receipt of federal grants and therefore only applies to schools that receive federal grants.
Self-Efficacy	Self-efficacy is the belief that one has the capabilities to execute the courses of actions required to manage prospective situations.
Teacher	For the purpose of this study, a person whose occupation is teaching in the public school system, has been certified by the state of Texas and identified themselves as being Hispanic/Latino.
Underrepresentation	Underrepresentation occurs when students are not placed in special education despite their disabilities.

CHAPTER II

REVIEW OF RELATED RESEARCH

This chapter will review a series of topics that stress the need for teacher education with regard to Attention Deficit Hyperactivity Disorder (ADHD), particularly when working with students from culturally and linguistically diverse backgrounds. First, a definition of ADHD will be provided along with information regarding its prevalence and incidence within the United States. Second, the creation of federal laws to protect the welfare of students who are ADHD is discussed. National and State trends with respect to children who receive special education services under the category of OHI also will be discussed. Third, the responsibility of states in implementing the eligibility requirements for children who are ADHD and served under IDEIA is reviewed. Fourth, the role that teachers play in the identification of children suspected of having ADHD will be addressed. Fifth, the negative consequences of high referral rates made by teachers also will be discussed. Particular emphasis will be made on the importance of teacher knowledge of ADHD. Sixth, additional cultural and linguistic factors that influence the referral process also will be discussed.

Definition of Attention Deficit/Hyperactivity Disorder

According to the U.S. Office of Special Education and Rehabilitation Services (OSERS 2003), Attention Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that affects the brain circuitry of an individual, resulting in problems with inattention and hyperactivity-impulsivity. ADHD is considered to be the most common child psychiatric diagnosis in the United States (Bussing, et. al. 1998).

According to Morantz (2006), results from a survey conducted by the Center for Disease Control and Prevention (CDC) found that nearly 4.4 million children from age four to seventeen years of age are diagnosed as having ADHD.

According to the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition Text Revised (APA, 2000), there are three subtypes of this disorder: predominantly inattentive, predominantly hyperactive-impulsive, and combined types. The hyperactivity/impulsivity component of ADHD often results in children having difficulty participating in tasks that require taking turns, and also are prone to blurt out answers, and to change from one activity to another before finishing (OSERS, 2003). In addition, children with ADHD that display inattentive features tend to make careless mistakes and dislike tasks that require sustained mental effort, which negatively affect their educational experience (OSERS, 2003). Barkley (1990) estimates that 95% of students with ADHD experience academic under-achievement. In addition, Cuffe, Moore, and Mckeown (2005) state that children with ADHD also have a learning disability 20% to 40% of the time. The comorbidity of ADHD and the subtypes of learning disability have been reported to be 8% to 39% for reading disability, 12% to 30% for math disability, and 12% to 27% for spelling disability (Barkley, 1998).

Research conducted by Taylor and Larson (1998) also indicates that children with ADHD also tend to be oppositional and often manifest behaviors such as: arguing with others, losing their emotional control, manifesting vindictiveness, and showing signs of defiance. Research conducted by Tannock (1998) indicates that approximately 40% to 90% of the cases of children with ADHD have a comorbid diagnosis of

Oppositional Defiant Disorder. Moreover, Goldman, Genel, Bexman and Slanetz (1998) suggests that children with ADHD also have a diagnosis of Oppositional Defiant Disorder 40% of the time, Conduct Disorder 20% of the time, and a mood disorders 10% to 20% of the time. Oftentimes, children with ADHD also are perceived as being less friendly, as talking less frequently, and as being less involved in interactions (Harris, Milich, Johnston, & Hoover, 1990). These inattentive and hyperactive/impulsive behaviors tend to continue and pose significant problems in both adolescents and adulthood, and may result in serious consequences such as job loss (APA, 2000; Gingerich et al., 1998). Given all the previously discussed maladaptive behaviors of children who suffer from ADHD, it is only logical to infer that these same children have an inability to function successfully both in school and social settings (Greene, Beiderman, Faraone, Ouellette, Penn, & Griffin, 1996). Research suggests that by the time children with ADHD reach adulthood they have attained lower grades, have failed more courses, have a higher retention rate, have higher dropout rates and overall have been less educated than their non-ADHD counterparts. Children's adult life also may be affected and can be evidenced by low SES and underemployment (Root & Resnick, 2003). The federal government has enacted federal statutes that ensure that state and local educational agencies address the needs of children with ADHD, creating the avenues for children to reach their full potential in an effort to avoid the aforementioned trajectories.

ADHD within Special Education

Federal Statutes

Children with ADHD may be protected by three federal statutes: Section 504 of the Rehabilitation Act of 1973 (Section 504), the Americans with Disabilities Act of 1990 (ADA), and the Individuals with Disabilities Education Improvement Act 2004, Part B (IDEIA, 2004).

Rehabilitation Act of 1973 (Section 504)

The Rehabilitation Act of 1973 was created to protect individuals with disabilities in activities and programs that receive federal funding from the U.S. Department of Education. This law ensures that the child receives adequate accommodations in the general education classroom. A child is protected by this law as long as he/she has or has had a physical or mental impairment that substantially limits a major life activity, or is regarded as disabled by others. Children who suffer from ADHD can receive accommodations under this law as long as it can be demonstrated that this disorder adversely affects the child's learning, which is considered a major life activity in the life of the child (OSERS, 2003).

American with Disabilities Act (ADA)

This federal law was enacted to ensure that all individuals with disabilities have equal access to activities and programs as their non-disabled counterparts. As with Section 504, a child is protected by ADA as long as he/she has or has had a physical or mental impairment that substantially limits a major life activity, or is regarded as disabled by others. This law requires that both private and public entities do not use

employment practices that discriminate on the basis of a documented disability. This law ensures that individuals with ADHD have access to the same programs and activities as their non-disabled peers, protecting children from discrimination.

Reauthorization of the Individuals with Disabilities Education Improvement Act of 2004

This federal law was enacted to ensure that all individuals who meet criteria for one or more of the thirteen qualifying conditions (autism, deafness, deaf-blindness, hearing impairment, mental retardation, multiple disabilities, orthopedic impairment, other health impairment, serious emotional disturbance, specific learning disability, speech or language impairment, traumatic brain injury, and visual impairment) receive special education and related services as long as a multidisciplinary team makes that determination. Children with ADHD can meet criteria for special education under the category of Other Health Impairment as long as the disability results in limited strength, vitality, or alertness, including a heightened alertness to environmental stimuli that results in limited alertness with respect to the educational environment and that is due to chronic or acute health problems.

National and State Trends of Students with Other Health Impairments

In 2001, there were a total of 253,795 United States children ages 6 – 21 years receiving services under the category of Other Health Impairment (OHI) (U.S. Department of Education, 2001). Three years later, in 2004, the number of children that met criteria for OHI increased by 53.8% with a total of 390,295 being served (U.S.

Department of Education, 2004). In Texas, significant increases in the number of children being served under this category also were observed. The number of children classified as OHI in Texas in 2001 was 35,487 (U.S. Department of Education, 2001). By 2004, there was a 21.3% increase in the children being served, totaling to 43,036 children (U.S. Department of Education, 2004). However, it is important to note that no data currently exists that would allow researchers to ascertain the number of children who have been classified as OHI and have ADHD. There is also no data regarding the number of children receiving accommodations in compliance with other federal statutes such as Section 504 of the Rehabilitation Act or the American with Disabilities Act.

State Responsibilities in Implementing Eligibility Requirements for ADHD under IDEIA

In order to address the growing need of children served in special education in the United States and to facilitate the implementation of federal statutes like IDEIA, the federal government delegates its responsibility and makes each state accountable for these children. According to Gregg (2000), each state along with their respective school systems, have ten responsibilities in implementing IDEIA for children who have ADHD as long as they are eligible to be served under the category of Other Health Impaired (OHI). The first responsibility is to make sure that public schools are able to locate, identify, and evaluate children who are disabled by ADHD. The second responsibility is to ensure that children with ADHD are provided with a Free and Appropriate Public Education (FAPE). The third responsibility is that school personnel must develop and implement an individual educational program (IEP) to meet that child's educational

need. Positive behavioral interventions also may be developed to assist the child's learning. The fourth responsibility is that schools must make an effort to involve parents in all decisions regarding the evaluation, eligibility, placement, and programming for their children. The fifth responsibility is for schools to educate children with ADHD with nondisabled children in regular education setting to the maximum extent appropriate. The sixth responsibility is that schools must provide parents with the procedural safeguards outlined by IDEIA. The seventh responsibility is for schools to ensure that the personnel providing special education and related services to children with ADHD have met state qualification standards. The eighth responsibility is for schools to include children in state performance goals. The ninth responsibility that schools must enforce is that children with ADHD will participate in state and districtwide assessment programs with appropriate accommodations. Finally, the tenth responsibility is for schools to monitor suspension and expulsion rates for children with ADHD as compared to nondisabled children.

The Role of Teachers in the Referral of Students with Suspected Disabilities

Much like the federal government delegates its responsibility for implementing IDEIA to the states, each state delegate responsibility to the local education agency and their personnel within that particular school system. School personnel, then are responsible for identifying, locating, and evaluating all children who may evidence a potential disability and subsequently are in need of early intervention or special education services (IDEIA, 2004). The identification of students with disabilities in the

school system usually begins with teachers noticing some sort of academic, behavioral, or emotional difficulty that prevents the student from making the expected educational gains (Gottlieb et al., 1991). Teachers and other school personnel that work with the student on a daily basis are the main identifiers of children with academic needs. Thus, teachers typically initiate the special education referral process (Frankenberger, Lozar, & Dallas, 1990; Lloyd et al., 1991; Gottlieb et. al., 1991).

Snider et al., (2000) found that initial referrals are made by teachers approximately 40% of the time. So, it is at this stage in the implementation of IDEIA that misidentification of students with disabilities can take place. A study conducted by Vereb and DiPerna (2004) indicates that teachers are usually the first to notice and refer children who are suspected of having ADHD for assessment and/or treatment. Hutton (1985) and Costello and Janiszewski (1990) suggests that the most influential factor in a teacher's decision to refer a child for special education is behavioral problems. Research seems to suggest that teachers are more likely to refer students with externalizing behavior problems than with internalizing behavior problems (Greene et al., 1996; Lloyd et al., 1991). Abidin and Robinson (2002) propose that this phenomenon may be due to the fact that it is more difficult to manage classroom situations when externalizing problems are manifested by children. Therefore, children who exhibit behavioral problems in the classroom may be more likely to be referred for special education for suspected ADHD and may be consequently placed under the OHI label even when the behavioral problems are associated with a different disorder or problem since teachers do not seem to be able to differentiate the problem behaviors between ADHD and other

disorders such as Oppositional Defiant Disorder (ODD) and Conduct Disorder (CD) (Stevens, Quittner, & Abikoff, 1998; Abikoff, Courtney, Pelham, & Kopelwicz, 1993; Schachar, Sandberg, & Rutter, 1986).

One study found that 62% of clinic referrals for suspected ADHD were not confirmed as ADHD cases (Desgranges, Desgranges, & Karsky, 1995). This high referral rate poses a significant problem for the overidentification of students with ADHD in special education; specifically under the IDEIA category of Other Health Impaired (OHI) given that a great majority of students who are referred (75% to 90%) are placed in special education settings (Algozzine, Christenson, & Ysseldyke, 1982). Given this information, one can see that the issues related to teacher referral are quite complex especially when dealing with children suspected of having ADHD. Overidentification of ADHD behavior may result in school resources being used unnecessarily. However, under-identification of children suspected of having ADHD may result in adverse consequences for the child such as drug use, poor academic outcomes, and engagement in antisocial activities (Barkley, Fischer, Edelbrock, & Smallish, 1990).

Teacher Knowledge of ADHD and Teacher Intervention

Teachers are an influential part in the referral process. It is important that teachers are well educated with regard to the symptomatology of this particular disability (Hawkins, Martin, Blanchard, & Brady, 1991). This is particularly important since teachers are expected to implement, evaluate, and support treatments for children with

ADHD (Hawkins et al., 1991). Furthermore, teacher knowledge about effective treatments and/or interventions designed for children diagnosed with ADHD may unduly influence their support for these treatments. With knowledge of ADHD, they may be better able to make accurate decisions regarding referrals.

It has been postulated that there is about one student with ADHD in every classroom (Barkley, 1998; DuPaul & Stoner, 1994). These children usually exhibit impulsive, hyperactive, and/or inattentive behaviors which may translate to an assortment of school related problems which include: difficulty staying seated, difficulty listening, difficulty in following directions, and difficulty in finishing their school assignments (Barkley, 1998; DuPaul & Stoner, 1994). Unfortunately, these behavioral manifestations sometimes make it more difficult for teachers to effectively teach students with ADHD (Hardman, Drew, & Egan, 1999). The notion that students with ADHD regularly show evidence of poor peer relationships, display social problems and show signs of low self-esteem which may impinge on their overall academic performance is well supported in the literature (Barkley, 1998; DuPaul & Stoner, 1994; Gardill, DuPaul, & Kyle, 1996). In order for teachers to successfully teach these students, teachers need to be knowledgeable about the etiology, diagnostic criteria, and expected trajectories of students with ADHD.

Shapiro and DuPaul (1993) have pointed out that lack of teacher knowledge about ADHD is one of the greatest obstacles in attending to the needs of this population. A study conducted by Pfiffner and Barkley (1990) as well as Sciutto, Terjesen, and Bender-Frank (2000) suggest that teachers have a poor grasp of the nature, course,

causes, and outcomes of ADHD. In order to provide adequate support to this susceptible group, teachers should possess sufficient knowledge of ADHD symptomatology in order to make accurate special education referrals as well as design effective interventions to meet their needs. The use of inappropriate interventions to address behaviors that cannot be modified (e.g., hyperactivity, impulsivity) may result in teacher frustration in addition to the possibility of the child not reaching his/her full potential. Teacher education is not only important for the prevention of a high number of referrals for special education, but it also is important in order for teachers to adequately meet the needs of their students, especially for children who suffer from ADHD since it negatively affects their academic outcome (DuPaul, Guevremont, & Barkley, 1991; Barkley, Fischer, Fletcher, & Smallish, 1993).

Teacher Self-Efficacy

According to Bandura (1997) self-efficacy is defined as one's beliefs in one's own capacity to both organize and execute the courses of action required to manage prospective situations. Another factor influencing teacher referrals is teachers' perceptions of their self-efficacy in working with children with ADHD (Reid, Vasa, Maag, & Wright, 1994). These researchers found that there is a difference between teachers who have had both prior experience and training in working with children with ADHD and those teachers who have not. Therefore, teachers with prior experience with ADHD are more likely to make accurate referrals of students suspected of having ADHD (Reid et. al., 1994). Podell and Soodak (1993) suggest that an interaction effect is present between teacher self-efficacy and student socio-economic status. Results from

that study indicate that teachers with low self-efficacy are less likely to consider regular education as adequate placement for a child when he/she comes from a family with a low socio-economic background and also has a mild disability, as opposed to teachers with high self-efficacy. Therefore, a teacher's decision about a child who has a low socio-economic status is more likely to be biased when the teacher perceives himself/herself as being ineffective (Podell & Soodak, 1993).

The Effects of Teacher Ethnicity on Referral Decisions for Special Education

Another factor affecting teacher referrals is that of teacher ethnicity on referral decisions for special education. Research indicates that the behaviors deemed either acceptable or problematic by teachers are culturally defined (Rong, 1996, Puig, Lambert, Rowan, Winfrey, Lyubansky, & Hannah, 1999; Weisz, Suwanlert, Chaiyasit, Weiss, Achenbach, & Trevanthan, 1988). According to Carlson & Stephens (1986) and Mehan et al. (1986) teachers are more likely to perceive the same behavior as being different when the ethnicity of the student was different from that of the teacher. Additional research also indicates that teachers rated students who were not from their ethnic background as being more appropriate for placement into special education (Tobias, Cole, Zibrin, & Bodlakova, 1982). This is especially problematic for children with diverse backgrounds given that 90% of teachers in the United States are Caucasian (U.S. Department of Education, 1998). Unfortunately, little research has been conducted investigating how underrepresented minority teachers have affected non-minority students (Daniel, & Brewer, 1995). Given that both culture and language are risk factors

for being inaccurately referred for special education; more research needs to be conducted to address this important issue. For example, no studies currently exist that examine the perception of Hispanic teachers regarding the referral of monolingual English-speaking children and English-Spanish bilingual Hispanic children to special education.

Additional Factors that Influence Teacher Perceptions and the Referral Process

Gender

Several additional factors have been shown to influence the referral process when referring students suspected of having ADHD. Gender differences are one such factor (Sciutto et al., 2004). Researchers have stated that the discrepancy between children who are referred and those who are not may be due to the expression of ADHD symptoms in males and females (Arcia & Conners, 1998). Sciutto et. al. (2004) state that boys exhibit more disruptive symptoms while Biederman et. al. (2002) states that girls tend to exhibit lower levels of disruptive behaviors. Given this information, it is logical to assume that males have a greater probability of being referred to special education than females. According to Sciutto et al., (2004), teachers were 1.5 times more likely to refer a hyperactive male than a hyperactive female. So, any gender differences found in teacher referrals for special education is likely to be the result of having identified more problems in males than in females (Sciutto et al., 2004).

Physical Appearance

Additionally, a child's height and weight appears to influence whether or not he/she is referred for special education services (Wisniewski et al., 1995). Wisniewski et al. (1995) demonstrated that students were referred at disproportionately higher rates as their height and weight increased in relation to what teachers consider being average for a student's age and gender. They explain that taller and heavier children could be viewed as older and consequently judged according to how older children should behave and perform academically.

Socio-Economic Status (SES)

Socio-Economic Status (SES) is another factor that influences teacher perceptions and referrals for special education (Podell & Soodak, 1993). According to Lichtenstein and Ireton (1984) children who come from low socio-economic backgrounds are overrepresented in special education. A research study conducted by Brophy and Good (1974) found evidence for this bias. Their research suggests that teachers tended to provide positive reinforcements to students from middle-class background but would have tendencies to neglect children from lower class systems and has been more recently reiterated in Podell and Soodak (1993). The exact effects of SES are difficult to ascertain since they are confounded by variables such as race (Kessler & Neighbors, 1986). Yet, there is also research indicating that children who come from low SES backgrounds are referred first and more often (Morgan, 1976; Reid, Casat, Morton, Anastopoulos & Temple, 2001). On the other hand, other research also suggests that a child's socioeconomic status does not significantly influence a teacher's decision to refer

a child to special education (Matusek & Oakland, 1979; Harvey, 1991). It would appear that the literature addressing the direct influence of SES on a teacher's decision to refer a child has not yielded any conclusive results and additional research needs to be conducted in this area.

Negative Consequences of High Referral Rates

Research indicates that teachers tend to be biased when identifying children during the referral process (Shinn et al., 1987; Drabman et. al. 1987; Tranowsky et. al, 1990). The decision of whether or not to refer a child for special education services has been linked to classroom behavior, motivation, and/or ability even when children are achieving within a normal range. This raises a problematic issue given that referrals almost always lead to placement in the special education setting (Algozzine et al., 1982, VanDerHeyden, Witt, & Naquin, 2003). If an inappropriate referral takes place, the likelihood that the child will be placed in special education despite a lack of educational need is very high. A general estimate is that 75% to 90% of initial teacher referrals will be validated by special education personnel (Algozzine et. al., 1982). According to Podell and Soodak (1993), psychologists engage in "confirmation bias," in other words psychologists look for and ultimately find reasons to support initial referral judgments. If the teacher information is biased then psychologists may end up confirming erroneous judgments (Podell & Soodak, 1993). In several studies, multidisciplinary team members have reported that the most influential data that was presented for the determination process of special education placement was that of the regular education teacher (Snider et al., 2000; Pelham, Gnagy, Greenslade, & Milich, 1992; Barkley, 1990; Ysseldyke &

Thurlow, 1984). In order to better understand the gravity of this issue, one also needs to examine the manner in which children are affected when given a special education label.

Detrimental Effects of Placing a Special Education Label on Children

A phenomenon called labeling bias takes place when people develop certain expectations of an individual who is given a particular label as a product of their disability (e.g., Emotional Disturbance, ADHD, etc.) (Koonce, Cruce, Aldridge, Langford, Sporer, & Stinnett, 2004). Algozzine, Mercer and Countermine (1977) as well as Boomer and King (1981) state that a child's personal attributes and/or diagnostic label directly influence teachers' perceptions, which result in teachers having more negative expectations of children who receive such labels than of those who do not have them and has been recently reiterated in Koonce et al., 2004. Furthermore, a study conducted by Gilling and Rucker (1977) found that teachers perceived children who had received a label as needing more intensive special services, and as having more severe academic and behavioral problems and has been also been reiterated in Koonce et al., 2004. In a different study, Thurman, Brobeil, Ducette, and Hurt (1994) found that early intervention personnel were less negative when they were given no descriptive information about a child.

Having a diagnostic label has practical implications for children in the classroom. For example, when teachers have negative expectations of children as a result of their diagnostic label, as in the case of children with ADHD, they will also tend to criticize them more, demand less of them, call on them infrequently, and praise them less (Bekle,

2004). In addition, Bay & Bryan (1991) and Li (1985) found that teachers' attitudes towards students are generally more negative when children have a diagnostic label than when they are perceived to be average in their overall achievement and abilities. Teachers should be aware that children with ADHD are likely to face significant disadvantages in their classroom (Algozzine, 1980; Coleman & Gilliam, 1983). For this reason, teachers should be careful not to further complicate the lives of children with ADHD or suspected ADHD either consciously or unconsciously since teacher expectations influence their subsequent actions (Hepperlen, Clay, Henley, & Barke; 2002). In addition to the aforementioned factors which directly impact the lives of children with ADHD, it also is important to examine additional factors that affect teacher perceptions.

Culturally and Linguistically Diverse Children and ADHD

The factors influencing teacher perception of students and their subsequent referral rate are only exacerbated when cultural and linguistic diversity is taken into account. There is no question that our nation is growing and becoming more diverse. Research has shown that the education system has not responded well to the needs of its diverse occupying students (Voltz, 1998). As an example, Cummings (1984) asserts that students from minority and low-social economic status are inappropriately being classified and placed in special education.

Disproportionate Representation in Special Education

Public schools are constantly faced with the over-representation of students from minority populations in special education (Daniels, 1998). According to Dunn (1968),

the over-representation of students with cultural and linguistic diversity (CLD) in special education first came to light more than thirty years ago. Research of this phenomenon by Li and Moore (1998) focused on demonstrating its detrimental impact on society, such as poor academic outcome and social stigma. Unfortunately, bringing this information to public attention was not enough to eliminate its pernicious occurrence. Nevertheless, the early research that was conducted yielded sufficient information to establish the educational inequities in key litigation cases. These cases would later pave the way for educational reform and legislation mandates.

Historically, children that have come from culturally and linguistically diverse backgrounds have been assessed in either a biased or discriminatory way (Diana v. State Board of Education, 1970; Larry P. v. Riles, 1979; Sattler, 1988). These types of biased assessments have led to the disproportionate pattern of diagnosis and placement in special education of Hispanics, African-Americans, and Asians.

At present, there continues to be a growing concern for the disproportional number of minority students being served under special education (Artiles & Trent, 1994; Gottlieb et al., 1994; Grossman, 1995). Bahr and Douglas (1991) state that for the past two decades there have been an overwhelming amount of minority students overrepresented in special education. Lipman (1997) indicates that the overrepresentation of culturally diverse students in special education is particularly visible in racially integrated schools. Furthermore, Shinn et al., (1987) found that teachers referred a higher percentage of black than white students in grades 4-6 and concluded that race is a factor that affects teacher referral decisions. In a meta-analysis

conducted by Hosp and Reschly (2003) they found that the referral rate was greater for both African-Americans and Hispanics. Hosp and Reschly (2003) also found that for every 100 Caucasian students that were eligible to receive services for special education, 118 African-American students and 89 Hispanic students were found to be eligible. In other words, when compared to Caucasian students more African-American students but less Hispanic students met eligibility criteria for special education. A study by Zucker and Prieto (1977) found that when a student was described as being Hispanic, teachers found placement in special education as being more appropriate and has been more recently iterated by Hosp & Reschly (2003).

The Influence of Culture in the Assessment of ADHD

To be in compliance with federal mandates, the impact of culture and language on the assessments used to diagnose and treat ADHD also has to be considered. By addressing these influences when evaluating children for potential ADHD, the over-representation of students in the special education system with cultural and linguistic diversity will be minimized. Evaluation procedures not only help determine if a child is eligible to receive special education services, but the Individuals with Disabilities Education Improvement Act of 2004 (IDEIA) also stipulates that these procedures protect students from being misidentified based on race, culture, language differences, and/or the disability itself.

Two ways of reducing the risk of misidentification are stipulated: (1) standardized tests must be administered by trained and knowledgeable personnel; and (2) standardized tests must be validated for the task for which they are used (20 U.S.C. §

1414(b) (3) (A)). In addition, tests must be used that are not racially or culturally discriminatory towards the child being evaluated (20 U.S.C. § 1414 (b) (3) (A) (i)). Furthermore, students must be tested in their native language or mode of communication. Determination of a disability rather than differences due to language development should always be the focus of an assessment (34 C.F.R. § 300.309 (a) (1); 34 C.F.R. § 300.309 (a) (2)).

According to IDEIA (2004), assessment instruments must not be racially or culturally discriminatory. In order to do so, it is important to overview some guidelines that convey the essential characteristics of instruments that have been validated across cultures. Marsella & Kameoka (1989) believe that there are four equivalences that should be considered in establishing the cross-cultural validity of an instrument. The first of these four equivalences is a linguistic equivalence. This equivalence addressed the importance of translating an instrument accurately along with its behavioral descriptors. This type of equivalence is crucial since different people responding to this instrument may not all agree on what is being measured or asked of them. Marsella & Kameoka (1998) suggest that to ensure that a common understanding is achieved, back translation should be used. Back translation entails translating a word into a second language and then retranslating it to the original language. The second of the four equivalences addresses the need for a conceptual equivalence (Marsella & Kameoka, 1989). This type of equivalence ensures that the concepts being measured by an instrument are very similar, if not the same; especially since culture differences may emerge in the way a concept is being perceived (Marsella & Kameoka, 1989). For example, a study

conducted by Reid et al., (1994) revealed that there are clear differences in the perceptions of ADHD across European, British, and American professionals. The third of the four equivalences addresses the need of having the same understanding of the scales being used (Marsella & Kameoka, 1989). When responding to Likert-type scales, the researcher must ensure that the frequency, intensity, and duration of the behaviors or concept being measured are rated similarly by the cultures being examined (Marsella & Kameoka, 1989; Ross & Ross, 1982). The fourth and final equivalence addresses the need for normative equivalence. This type of equivalence ensures that the norms and standards that are developed for one culture are appropriate for different cultures as well (Marsella & Kameoka, 1989).

There are additional considerations that must take place when evaluating an instrument for its cross-cultural validity such as the equality of population means, the equality in the base rate and intensity of a disorder (Reid, 1995). Behavior rating scales can be very useful in diagnosing ADHD, however, practitioners should be aware that the results obtained when using an instrument cross-culturally may be inappropriate. Maag and Reid (1994) suggest other ways of assessing a child such as multi-method functional approaches like looking at behavior baselines, designing interventions to treat the behavior, reviewing the outcomes, and revising interventions if necessary.

Factors Influencing Teacher Referral Decisions with Minority Students

The study of teacher perceptions regarding children with ADHD from ethnic minorities has also raised serious concerns. In a study conducted by Langsdorf,

Anderson, Waechter, Madrigal & Juarez (1979), they noted that Mexican American and African American children from low SES backgrounds are less likely to have adopted the middle class values and attitudes that are characteristic of childhood socialization patterns in American education and are consequently more at risk of being referred for special education. Overall, ethnic minorities with ADHD have been understudied (Reid et al. 2000).

Linguistic Diversity as a Risk Factor in the Referral Process

Linguistic diversity also influences teacher referrals. Arcia, Frank, Sanchez-LaCay & Fernandez (2000) state that the identification of children with ADHD becomes problematic in cases where English is a student's second language. These researchers further mention that characteristics of the behavior must be distinguished from inattentiveness or disruptiveness which may be the result of the child not understanding the language of instruction. Research suggests that students with limited English proficiency continue to be over-referred for special education (Figueroa, 1989; Ortiz, 1988). On the other hand, there are some special education teachers who decide not to refer children for special education services since they were aware that services in the needed language (e.g., Spanish, Hmong, etc) were not available (Campbell et al. 1993). Therefore, English Language Learners may be at special risk for being over-referred or under-referred to special education for suspected disabilities such as ADHD.

National Standards for School Psychologists in Working with Diverse Populations

The American Psychological Association (APA) along with the National Association of School Psychologists (NASP) has proposed several standards for psychologists that reflect and coincide with federal laws such as the Individual with Disabilities Act (IDEIA). These professional standards convey the importance for practitioners to engage in culturally appropriate practices when working with clients with diverse backgrounds. Standard 8 postulated by the American Psychological Association (1993) indicates that psychologists are responsible for addressing biases, prejudices, and discriminatory practices. In addition, the National Association of School Psychologists (NASP) also created six domains for practice when working with culturally and linguistically diverse students (Rogers, Ingraham, Bursztyn, Cajigas-Segredo, Esquivel, Hess, et al., 1999). Sections B and C of Domain II are particularly relevant to this study. Domain II (b) accentuates the need for school psychologists to exercise a leadership role with regard to seeking and implementing systemic interventions to aid children with culturally and linguistically diverse backgrounds (Rogers et al., 1999). This domain also urges school psychologists to analyze referrals within the context of institutional and systemic patterns such as racism and cultural differences. Domain II (c) makes school psychologists responsible for educating school systems about the learning, development, and well-being of children with culturally and linguistically diverse backgrounds (Rogers et al., 1999). In sum, these standards for professional practice suggested both by APA and NASP, stress the importance for

school psychologists to be proactive in the guarding the well-being of children with culturally and linguistically diverse backgrounds.

Responsibilities of School Psychologists in Teacher Education of ADHD

School psychologists can educate teachers and other school personnel about ADHD and their role in documenting the observable characteristics that are often associated with such a diagnosis. School psychologists also can assist school personnel in differentiating general or sporadic off-task behaviors from the patterns of behaviors that must be present to diagnose a child with ADHD. Many times, off-task behavior can be explained by examining the function that the behavior is serving. For example, if a student talks to other students in the classroom instead of working, it is likely that the student is seeking peer attention. With children that suffer from ADHD, behaviors are pervasive and do not always serve a function. Rather, these behaviors are a manifestation of their disability, over which they have no or little control. By examining a student's behavior pattern closely, teachers can ensure that the referral process at their respective schools become more efficient and effective. Given the high number of referrals, it is important to examine which behaviors or behavior clusters are likely to be misperceived as potential ADHD so that teachers can be educated on this fallacy.

Significance of the Study

Given the lack of information in the literature regarding the influence of ethnicity on Hispanic teacher perceptions as they pertain to inaccurate referrals for special education in children suspected of having ADHD, the purpose of this study is to examine

Hispanic teacher perceptions of off-task behaviors and to investigate what factors influence teachers' decisions to refer these children to special education. In order to do so, it will be important to determine how knowledgeable teachers are with respect to ADHD and to ask them to make evaluative judgments about scenarios regarding students that present behaviors commonly seen in classroom.

The first objective of this study is to ascertain whether Hispanic teachers' level of perceived knowledge of ADHD changes after being presented with information on this disorder. The second objective of this study is to evaluate if Hispanic teachers' actual knowledge about ADHD changes after being presented with information on the disorder. The third objective of this study is to ascertain whether there is a change in the referral patterns of Hispanic teachers, based on student ethnicity, before and after being presented with information on ADHD. As part of this objective, this study will explore if Hispanic children are more likely to be referred for special education services than their Caucasian counterparts. This study will assist school psychologists and other school personnel in obtaining a better understanding of children with ADHD within the Hispanic culture. The information yielded by this study also may be useful in reducing the referrals made by teachers within the school system.

CHAPTER III

METHODOLOGY

This chapter will describe the demographic information of the school district where the study was conducted as well as the demographic information of teachers that chose to participate in this study. This chapter also will present a discussion of the materials that were used in the study, the procedures that were followed, as well as the proposed research questions respectively.

Participants

Geographic Region

Data for this study was collected from a public school district located in South Texas. According to district data there were approximately 1,631 teachers working in the participating schools during the 2002-2003 academic year (Texas Education Agency, 2004). The district was chosen by the researcher based on the large Hispanic population of teachers and students available at each school. This local school system serves approximately 25, 250 students in 36 schools (Texas Education Agency, 2004). For the convenience of the reader, descriptive statistics were conducted and are presented below to familiarize the reader with the socio-demographic characteristics of the participants in the study.

Demographic Characteristics of the Sample

Data collection for the present study took place across four elementary schools from a school district in South Texas. All teachers and administrators were invited to participate in the study in accordance with the procedural guidelines mentioned in the

latter section of this chapter. There were a total of 140 participants in this study of which 7 were excluded from the data-set given that they either had a significant amount of missing data or they identified themselves as being Caucasian. Therefore, only a total of 133 participants were considered valid cases and were included for analysis. Table 1 presents the demographic characteristics of the participants which will be discussed in greater detail below.

Table 1
Demographic Characteristics of the Sample

	Teacher Ethnicity	Teacher Gender	Teacher Level of Education	Years of Experience	Professional Role	Grade Taught	Teacher Certification Type	Teacher Age
N	133	133	133	133	133	133	133	133
Mean	1.00	1.84	1.56	2.87	2.02	2.89	1.22	39.12
Mdn	1.00	2.00	1.00	2.00	2.00	3.00	1.00	37.00
SD	.000	.366	.801	1.979	.149	2.400	.414	10.679

Student and Teacher Ethnic Composition

With respect to student ethnic composition, district data indicates that 97% of students enrolled in the school district are Hispanic and 3% are Caucasian (Texas Education Agency, 2004). With respect to teacher demographic information, district data also indicates that 89% of all teachers are Hispanic and that 11% are Caucasian (Texas

Education Agency, 2004). Given the focus of this study, all 133 teachers selected for inclusion in the study identified themselves as being Hispanic/Latino.

Gender

According to the Texas Education Agency (2004), approximately 71.8% teachers were female and 28.2% were male for the chosen school district. No information was available with respect to the proportion of male teachers to female teachers by school level (e.g., elementary, middle school, and high school). Since the sample for this study was comprised of elementary school teachers, it was expected that the majority of teachers participating in this study would be female. The data collected for this research study closely resembles that of the school district. The majority of teachers in the sample were female (84.2%) while only a small proportion was male (15.8%) as was expected.

Teaching and Training Experience

Approximately 44% of teachers in the school district teach regular education classrooms, 31% of teachers teach bilingual/ESL, 9% of teachers teach special education, 4% of teachers teach career and technology, 2% of teachers teach compensatory education, and 10% of teachers taught other education (Texas Education Agency, 2004). School district data indicate that only 34.1% of teachers have less than 5 years of experience with the average teacher holding approximately 11.9 years of experience (Texas Education Agency, 2004). The demographic characteristics for the sample are comparable to the district data, although data was not collected on all of the characteristics reported by the Texas Education Agency since they were beyond the

scope of this study. The obtained teacher characteristics with respect to their teaching and training experience for this sample are mentioned below.

Subjects Taught

In this study, 70 teachers reported that they taught English (52.6%), 86 teachers reported that they taught Mathematics (64.7%), 83 teachers reported that they taught Reading (62.4%), 14 teachers reported that they taught Special Education (10.5%), 83 teachers reported that they taught Science (62.4%), 77 teachers reported that they taught History (57.9%), 26 teachers reported that they taught Art (19.5%), 11 teachers reported that they taught Physical Education (8.27%), 46 teachers reported that they taught English as a Second Language (34.6%), 80 teachers reported that they taught Bilingual Education (60.2%), and 12 teachers reported that they taught Other subjects (9.02%). It should be noted that the majority of teachers reported teaching multiple subjects as is expected at the elementary level.

Level of Education

Teachers in the study were asked to indicate the level of education they had attained. The majority of teachers indicated they had a four-year college degree (n = 84; 63%), followed by teachers with a professional or graduate degree (n = 26; 20%) and teachers who had received some schooling beyond college (n = 23; 17%). Figure 1 illustrates the level of education reported by the sample.

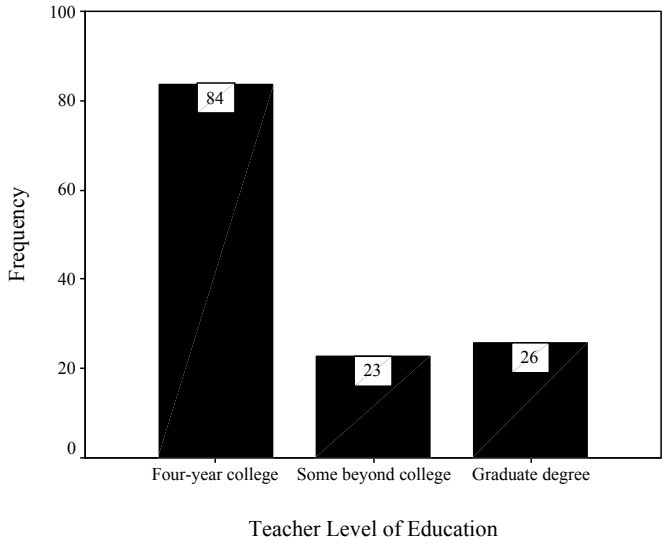

Figure 1
Teacher Level of Education

Years of Experience

Teachers in the study were asked to indicate how many years of teaching experience they had. The most frequently reported range of teaching experience for this sample was in the 0 to 5 years range which was reported by 43 teachers in the sample, forming 32.3% of the sample. There were 34 teachers who had 6 to 10 years of experience, comprising 25.6% of the sample. There were 13 teachers who had 11 to 15 years of teaching experience and made up 9.8% of the sample. There were 13 teachers who had 16 to 20 years of teaching experience and formed 9.8% of the sample. There were 12 teachers who had 21 to 25 years of teaching experience, comprising 9% of the sample. There were 9 teachers who had 26 to 30 years of teaching experience and made up 6.8% of the sample. There were 6 teachers who had 31 to 35 years of teaching

experience and formed 4.5% of the sample. Lastly, there were 3 teachers with 36 to 40 years of experience and made up 2.3% of the sample. Figure 2 illustrates the distribution of years of teaching experience that teachers reported.

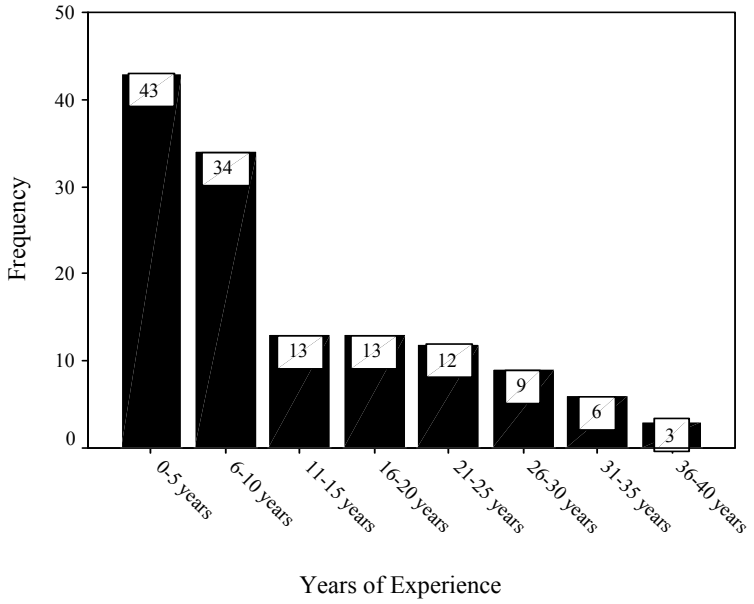

Figure 2
Years of Teaching Experience Reported by Teachers

Professional Role

Participants in the study also were asked to choose between one of three professional roles: paraprofessional, teacher or administrator. Of the 133 participants in the study, 131 participants identified themselves as teachers (98.4%) and only 2 participants identified themselves as administrators (1.6%). Given that all administrators

in this school district are required to be certified teachers and have at least three years of teaching experience prior to becoming administrators, they were included in the study. No participants identified themselves as being paraprofessionals.

Elementary Grades Taught by Teachers

All grades at the elementary level were represented in the sample. Elementary grades in the sample ranged from pre-kindergarten to fifth grade. Overall, teacher grades were relatively evenly distributed with the exception of pre-kindergarten teachers. Teachers who taught pre-kindergarten comprised 5.3% of the sample (n = 7). Teachers who taught kindergarten made up 13.5% of the sample (n = 18). Teachers who taught first grade comprised 15.8% of the sample (n = 21). Teachers who taught second grade made up 12.8% of the sample (n = 17). Teachers who taught third grade comprised 12% of the sample (n = 16). Teachers who taught fourth grade made up 14.3% of the sample (n = 19). Teachers who taught fifth grade comprised 12% of the sample (n = 16). Teachers who are involved with all grade levels, as in the case of special education teachers, physical education teachers and administrators made up 14.3% of the sample (n = 19). Most teachers in the sample were comprised of first grade teachers while the least number of teachers were from pre-kindergarten. Figure 3 illustrates the representation of all grade levels in the sample.

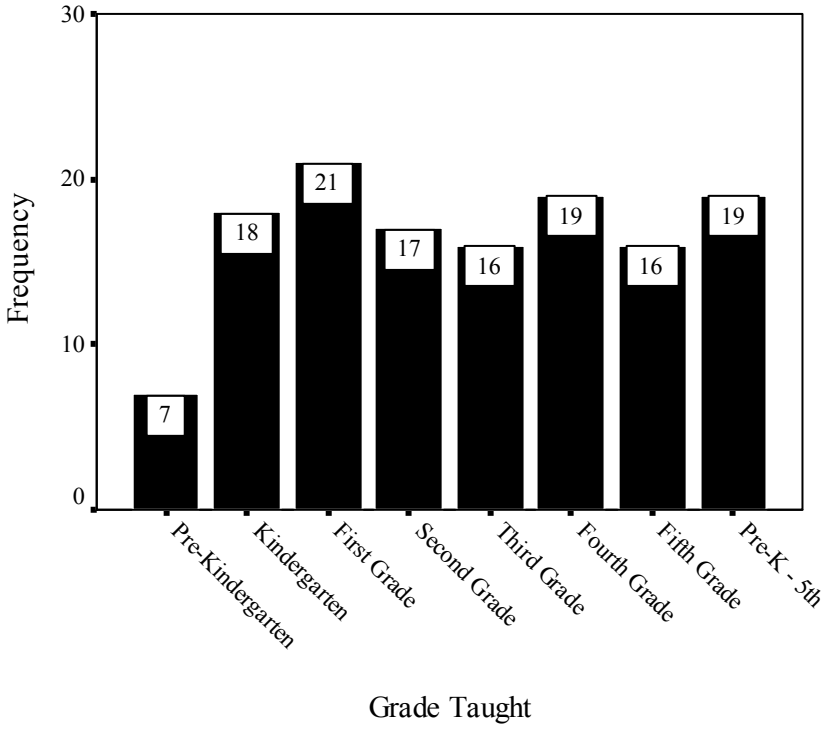

Figure 3
Grade Level Representation

Teacher Certification

Participants in the sample indicated whether they had been certified as a result of having concluded a traditional college program or whether they had been certified through an alternative certification program. Approximately 78.2% of teachers reported having finished a traditional program while 21.8% of teachers reported having completed an alternative certification program.

Age

There was a wide variety of ages reported by teachers in the sample. The mean teacher age for the 133 participants was 39 years with a standard deviation of 10.7 years. The age range reported by teachers spanned from 21 years to 67 years. Figure 4 illustrates the age of teachers in the sample.

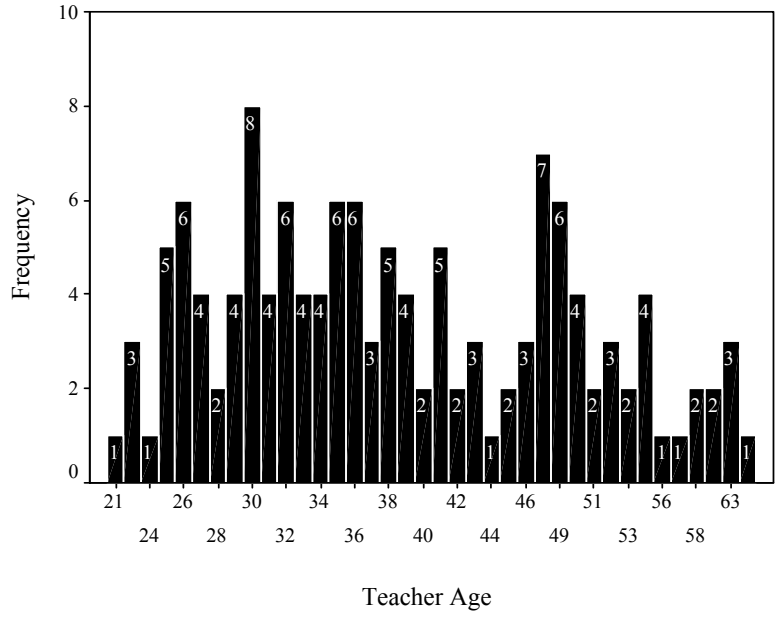

Figure 4
Teacher Age

Materials

Each teacher completed a series of paper-pencil measures in an approximately 15-minute sessions. The materials involved in this research included: 1) participation

instructions and consent form (See Appendix A), 2) demographic questionnaire (See Appendix B), 3) the Teacher Self-Knowledge and Efficacy Scale (Appendix C), 4) the Knowledge of Attention Deficit Disorders Scale (See Appendix D), 5) original and modified vignettes (See Appendix E), 6) participation Thank-You letter (See Appendix F), 7) ADHD inservice handout (See Appendix G), and a 8) managing difficult behavior inservice handout (See Appendix H). It should be noted that all materials utilized in this study were reviewed and approved by the Texas A&M's Institution Review Board.

Participation Instructions and Consent Form

A form was developed for this study containing the purpose of the study, the instructions needed to participate in this study, request for consent, as well as information on how to obtain preliminary and final results of the study. This form can be found in Appendix A.

Demographic Questionnaire

A questionnaire was created to obtain detailed demographic information regarding the participants in the sample including variables such as: name, grade(s) taught, subject(s) taught, years of teaching experience, age, gender, level of education, type of certification held, method of certification, and self-report proficiency in non-English language (See Appendix B). In addition, teachers were asked to choose from the following list of ethnicities: Hispanic/Latino, Caucasian/White, Native American/Indian, African American/Black, Asian/Pacific Islander, and Other. A total of ten questions were included in this questionnaire.

Teacher Self-Knowledge and Efficacy Scale

The Teacher Self-Knowledge and Efficacy Scale also was be created by the researcher and can be found in Appendix C. This instrument was created in order to understand how Hispanic teachers perceive themselves when working with children who have been diagnosed as ADHD or are suspected of having ADHD. The development of this instrument took place as a result of a discussion with two professionals in the field who were knowledgeable in the areas of special education and ADHD. As a result of the discussion, several key factors were identified and were made into items in this instrument. The instrument was reviewed twice by two professionals in the field for grammatical issues, scaling issues and content. The instrument was therefore revised twice by the researcher after receiving feedback from the aforementioned professionals. The final version of the questionnaire was the one used for this study and contains 5 items that asks information regarding a teacher's perception of their knowledge of ADHD. Specifically, the areas addressed by this questionnaire are 1) the degree of comfort teachers perceive to have with regard to their own knowledge of ADHD, 2) the degree of comfort the teacher has in teaching a student who is ADHD, 3) the degree of comfort the teacher has in developing interventions to assist a student who is ADHD, 4) the degree of efficacy in teaching a student with ADHD, and 5) the degree of comfort a teacher has in detecting a student suspected of having ADHD. Responses to these questions were obtained using a 6-point Likert scale. Participants responded to this instrument by circling one of six answer choices: Very Uncomfortable, Uncomfortable,

Somewhat Uncomfortable, Somewhat Comfortable, Comfortable and Very Uncomfortable.

Reliability and Validity

Reliability analyses were conducted for the three time periods where data was collected from the teachers using the Teacher Self-knowledge and Efficacy Scale. The reliability of the data was assessed using an estimate of internal consistency (Cronbach's α). Higher levels of reliability usually allow researchers to place more confidence in the results they obtain since that would mean that there is consistency in how a variable is being measured (e.g., Self-knowledge). All estimates of internal consistency for the data collected with the Teacher Self-knowledge and Efficacy Scale were moderately high to high. The estimates of internal consistency were $\alpha = .86$ (before the inservice), $\alpha = .90$ (after the inservice) and $\alpha = .87$ (two weeks after the inservice). The obtained reliability estimates indicate that the results of the statistical analyses mentioned in chapter IV can be interpreted with confidence. Given that the Teacher Self-Knowledge and Efficacy Scale was created by the researcher, no measures of validity currently exist.

Knowledge of Attention Deficit Disorder Scale

The Knowledge of Attention Deficit Disorder Scale (KADDS) was created by Sciutto et al. (2000) and is a 36-item rating scale (see Appendix C). Each item in the instrument is designed to assess knowledge of ADHD in one of three domains: symptoms/diagnosis, treatment, and general information such as prevalence rates. Participants responded to this instrument by circling one of three answer choices: true (T), false (F) or don't know (DK) format. The KADDS is designed to differentiate

participant misperceptions from what participants do and do not know about ADHD. Correct answers are scored as one point while incorrect answers, don't know, and missing answers are scored as zero points. Scores are found by calculating the total number of points and then converting them to a percent for each subscale and for the total scale.

Reliability and Validity

Sciutto et al. (2000) established the reliability for this instrument by using a sample of 149 elementary school teachers from New York. Internal consistency coefficients (Cronbach's alpha) were $\alpha = .86$ for the total KADDS score while internal consistency coefficients for all the subscales were approximately $\alpha = .70$.

Reliability analyses also were conducted for the three time periods where data was collected from the teachers using the KADDS. The reliability of the data was assessed using an estimate of internal consistency (Cronbach's α). All estimates of internal consistency for the data collected with the KADDS were moderately high to high and are consistent with the research conducted by Sciutto et al. (2000). The estimates of internal consistency were $\alpha = .86$ (before the inservice), $\alpha = .91$ (after the inservice) and $\alpha = .92$ (two weeks after the inservice). The obtained reliability estimates indicate that the results of the statistical analyses mentioned in chapter IV can be interpreted with confidence. No internal consistency estimates were computed for the KADDS subscales given that only the total score was used to asses teacher knowledge of ADHD. No information was available regarding this measure's validity.

Vignettes

Two sets of three separate case vignettes were developed by the researcher and describe the behavioral and/or academic difficulties of a third grade student (See Appendix D). The vignettes were developed by creating a story that had face validity for teachers in the field and that contained information about a student's challenging off-task behavior. These behaviors chosen for the story are commonly seen in children who have ADHD or who are suspected of having ADHD. The vignettes were reviewed twice by a professional knowledgeable in the field of special education and school psychology for grammatical issues as well as content. The vignettes were therefore revised twice by the researcher after receiving feedback from the aforementioned professional. The first set of case vignettes (1a, 1b, 1c) is of a Hispanic student who presents with academic and/or behavioral difficulties. The second set of vignettes (2a, 2b, 2c) is of a Caucasian student who also presents with academic and/or behavioral difficulties.

All three scenarios within a particular set of vignettes had the same number and type of behaviors relating to inattention and hyperactivity/impulsivity, however, the order in which these symptoms were presented in each vignette was the only variation. All vignettes had the same set of academic and/or behavioral difficulties and are consistent with behaviors found in the DSM-IV that are part of the criteria for a diagnosis of ADHD: 1) tapping a pencil during quiet time, 2) leaning back on a chair, 3) socializing during the lesson time, 4) exhibiting off-task behavior, 5) difficulty initiating tasks after receiving instructions, 6) failing to complete tasks and 7) difficulty remaining focused. No new variables were introduced in each of the three scenarios.

All vignettes are half a page in length, single-spaced, containing 14 sentences from beginning to end. In the bottom half of the page, each participant was asked to answer questions regarding their decision to refer a child for special education services, the types of interventions they would use (e.g., behavioral contract, modifications, detention, etc.), the type of outcomes teachers would expect as a result of the referral (e.g., evaluation for a learning disability, emotional disturbance, or therapy), the expected trajectories for children (e.g., staying the same, getting worse, or make improvement), and whether or not they would suspect ADHD in the child.

Inservice Handouts

Two different presentations were created for this study. The first presentation informed teachers on general information regarding ADHD, the symptomology, the diagnostic process, as well as research-based interventions that have proven to be useful for children with ADHD. The second presentation informed teachers on the importance and methods of managing difficult behavior. Both inservice presentations were created by the researcher. The researcher gathered the information for the presentations by conducting an extensive review of textbooks and research articles on key issues surrounding each respective topic. There was little to no overlap in the presentations. However, some overlap may have occurred since a small part of the presentation on ADHD included specific classroom interventions to deal with the difficult behavior exhibited by children with ADHD while the presentation on managing difficult behavior included information on how to handle difficult behavior in general. Once the inservice presentations were created, they were reviewed and approved by three professionals

knowledgeable in those areas. At the time the presentations were conducted, teachers were given handouts with the same information as was being discussed. The presentation handouts can be found in Appendices F and G, respectively.

Procedures

Before conducting this study, the researcher obtained permission to work with human participants from the Texas A&M Institutional Review Board. Once the study was approved, then the researcher proceeded to attain authorization from the school district's superintendent. School principals were contacted and permission was granted to recruit teachers at faculty meetings taking place after school hours. Recruitment of teachers consisted of providing them with a brief overview of the study and importance of their participation (See Appendix A). Recruitment of teachers took place at four different elementary schools within the school district.

All teachers participating in the study received a large envelope containing two smaller envelopes, which were pre-packaged by the researcher to ensure that all participants received materials in the specific order outlined below. The first envelope contained the Demographic Questionnaire, the Teacher Self-Knowledge and Efficacy Scale, the first case vignette, as well as the KADDS. The second envelope contained the Teacher Self-Knowledge and Efficacy Scale, an alternate form of the first case vignette and the KADDS. A third envelope containing the Teacher Self-Knowledge and Efficacy Scale, an alternate form of the first case vignette and the KADDS were distributed in person two weeks after the study. Each envelope was assigned a number and a letter written on the top right side. The purpose of the numbers and letters assigned to the

envelope was to protect the identity of the teachers when conducting data analysis. The number represented each participating teacher while the letter next to the number indicated the time at which the data was collected. Numbers beginning with a 0 indicated that the case vignettes involved a Hispanic student while numbers beginning with a 1 indicated that the case vignettes involved a Caucasian student. The letter A indicated that the information was collected before the inservice was provided, the letter B indicated that the information was collected immediately after the inservice, and letter C indicated that the information was collected two weeks after the inservice. All the numbers paired with each letter were randomly distributed.

Participating teachers were handed the large envelope and were instructed to open the envelopes with numbers that had an A next to them. Teachers were then asked to first read the instructions with an explanation of the purpose and need for the study as well as the process that needed to be followed in order for them to participate in the study (See Appendix A). Once the participants finished reading the instructions, the researcher proceeded to ask the participants if any clarification was needed. If so, the researcher explained any information that was requested orally. Teachers were then asked to complete the Demographic Questionnaire and the Teacher Self-Knowledge and Efficacy Scale respectively (See Appendices B and C). Next, teachers were asked to read the case vignette and answer the questions located at the bottom half of the page (See Appendix E). Half of the teachers in the participating school were given a case vignette discussing the problem behaviors of a Hispanic student, while the other half were given a case vignette discussing the problem behaviors related to a Caucasian student.

Participants were given approximately 10 minutes to read the vignette and answer the corresponding questions. All participants were asked not to discuss or share information with any of the other participants. Once teachers had finished answering the questions located in the vignette, the researcher then asked teachers to complete the KADDS and approximately 15 minutes were given to complete this task (See Appendix D). Once the task was completed, the researcher asked the teachers to place all completed materials back inside the corresponding envelope. The researcher then proceeded to give either the inservice dealing with information about ADHD or the inservice dealing with information about how to manage difficult behaviors, depending on the condition the school was assigned. Each inservice lasted approximately 25 to 30 minutes.

Immediately after the inservice was provided, teachers were instructed to take out the materials found in envelope B. Teachers were again asked to complete the Teacher Self-Knowledge and Efficacy Scale in a 10 minute time span. Participants who initially received a case vignette dealing with the problem behaviors of a Hispanic child were given a variation of the initial case vignette, also dealing with a Hispanic child, after the inservice. The same process was followed for participants who received a case vignette dealing with the problem behaviors of a Caucasian child. Ethnicity of the case vignettes remained constant for each participant so that the effects of the inservice would not be confounded with the ethnicity of the case vignette. Participants were given 10 minutes to read the second case vignette and answer the corresponding questions. Participants were again asked not to discuss any information with other participants.

Immediately after, teachers were asked to complete the KADDS for a second time as well. Participants were given 15 minutes to complete the task, after which, all envelopes were collected. At that time, participants were thanked for their participation and were told that they would be contacted in two weeks.

When the two weeks passed, the participants were asked to complete the Teacher Self-Knowledge and Efficacy Scale, the third case vignette as well as the KADDS in the same manner as before. The materials were collected at that time and all participants received a letter from the researcher thanking them for their participation in the study along with specific contact information (e.g., phone number, physical address, e-mail address) in case they wished to receive the results of the study (See Appendix F).

Design and Plan of Analysis

Design

The study consisted of collecting information from the participants at three different time points: before the inservice, after the inservice, and two weeks after the inservice. It was imperative that information using all materials be collected prior to the intervention since it would be otherwise impossible to ascertain if the groups under observation were initially different. Schools that accepted to participate in the study were assigned to one of two different groups, one being the experimental group and the other being the control group. The experimental group received an inservice regarding ADHD, while the control group received an inservice regarding information on managing difficult behavior. The study took place after school hours in a conference room, school

library, cafeteria or any other room available that was large enough to be able to sit all participating teachers.

A Priori Power Analysis and Statistical Significance

A prospective power analysis was conducted for this study. According to Stevens (2002), statistical methods for determining the appropriate sample size to achieve the desired power were followed. A sample size greater than or equal to 30 was needed in order to detect an effect size of .35 with a power = .8 (B = .2) using a statistical significance level of .05, assuming a moderate within factor correlation (r = .5) when there are three repeated measures (Stevens, 2002). No retrospective power (observed power in SPSS) analyses were conducted for any analysis in this study given that calculating power given the effect size observed is not useful and yields no more information than observed p-values (Thomas, 1997). According to Thomas (1997), the observed effect size is dependent and inversely related to p-values and power. In other words, statistical tests with high power will have low p-values and vice-versa. Therefore, using the observed variance and effect size to calculate power is just another way of repeating the statistical significance of the test (Thomas, 1997). With respect to the significance level used in this study, an alpha level of .01 was used for all repeated measures analyses performed.

Research Questions

This study addresses three research questions that were designed to obtain a better understanding of factors that may influence a Hispanic teacher's decision to refer a child for special education services such as a teacher's perceived comfort level of their own

knowledge of ADHD, a teacher's actual knowledge of ADHD, and the ethnicity of the student being considered for a special education referral. The research questions are listed below for the convenience of the reader. The statistical techniques chosen to address these questions will be discussed in detail along with the results in chapter IV.

1. Does a teachers' perceived comfort level about their knowledge of ADHD change significantly in Hispanic teachers after being provided with an inservice on the disorder?

   It was hypothesized that the teachers' perceived comfort level about their knowledge of ADHD would significantly increase over time and be significantly greater for those teachers that receive the ADHD inservice than for those teachers that receive the managing difficult behaviors inservice.

2. Does the knowledge level about ADHD as measured by the total score in the KADDS change significantly in Hispanic teachers after being provided with an inservice on the disorder?

   It was hypothesized that the teachers' knowledge level about their knowledge of ADHD as measured by the KADDS would significantly increase over time and be significantly greater for those teachers that receive the ADHD inservice than for those teachers that receive the managing difficult behaviors inservice.

3. Is there a change in referral patterns after inservice training?

   It was hypothesized that teachers who received the inservice for ADHD would significantly refer more students for special education than those teachers who received the managing difficult behaviors inservice after the presentation. Moreover,

it also was hypothesized that teachers would significantly refer more Caucasian children to special education than their Hispanic counterparts.

CHAPTER IV

STATISTICAL ANALYSES

In order to address the research questions proposed in this study, several statistical analyses were performed. In addition, data characteristics were explored to ensure that the results of the univariate analyses could be appropriately interpreted.

There were 66 participants assigned to the control group and 67 participants assigned to the experimental group. In addition, 68 participants received a vignette of a Caucasian student, while 65 participants received a vignette of a Hispanic student. The independent variable used in this study included the assignment of teachers to an experimental condition. The dependent variables in this study consisted of the participants' response to the questions regarding a teacher's perceived comfort level about their knowledge of ADHD, teachers' responses to the KADDS and teachers' responses to whether or not the student in the vignette should be referred for special education. Table 2 presents the demographic characteristics of the sample for those teachers who received the inservice on managing difficult behavior (control group) and teachers who received the inservice on ADHD (experimental group). By examining the means and standard deviations of these two groups one can conclude they are comparable on all demographic characteristics.

Table 2
Demographic Characteristics of the Sample by Experimental Condition

		Teach. Ethn.	Teach. Gender	Teach. Level of Educ.	Yrs. of Exp.	Prof. Role	Gr. Taught	Teach. Cert. Type	Teach. Age
Control									
	N	66	66	66	66	66	66	66	66
	Mean	1.00	1.80	1.50	2.92	2.00	2.82	1.23	39.26
	Mdn	1.00	2.00	1.00	2.00	2.00	3.00	1.00	37.00
	SD	.00	.40	.77	2.11	.00	2.30	.42	10.33
Experimental									
	N	67	67	67	67	67	67	67	67
	Mean	1.00	1.88	1.63	2.82	2.04	2.97	1.21	38.99
	Mdn	1.00	2.00	1.00	2.00	2.00	3.00	1.00	37.00
	SD	.00	.33	.83	1.86	.21	2.51	.41	11.08

Table 3 presents the demographic characteristics of the sample for those teachers who received the vignette concerning a Caucasian student and teachers who received the vignette concerning a Hispanic student. By examining the means and standard deviations of these two groups one can conclude these groups also are comparable on all demographic characteristics. The research questions are listed below for the convenience of the reader.

Table 3
Demographic Characteristics of the Sample by Student Ethnicity

		Teach. Ethn.	Teach. Gender	Teach. Level of Educ.	Yrs. of Exp.	Prof. Role	Gr. Taught	Teach. Certif. Type	Teach. Age
Caucasian									
	N	68	68	68	68	68	68	68	68
	Mean	1.00	1.84	1.49	2.75	2.04	3.03	1.21	37.43
	Mdn	1.00	2.00	1.00	2.00	2.00	3.00	1.00	36.00
	SD	.00	.37	.74	1.82	.21	2.29	.41	9.67
Hispanic									
	N	65	65	65	65	65	65	65	65
	Mean	1.00	1.85	1.65	3.00	2.00	2.75	1.23	40.86
	Mdn	1.00	2.00	1.00	2.00	2.00	2.00	1.00	39.00
	SD	.00	.36	.86	2.14	.00	2.52	.43	11.44

Research Question One

Does a teachers' perceived comfort level about their knowledge of ADHD change significantly in Hispanic teachers after being provided with an inservice on the disorder?

In order to analyze research question one, a 2 x 3 repeated measures ANOVA was conducted. There was one between factor (experimental condition) with two levels. The first level in the between factor was the group who received the ADHD inservice (experimental group), while the second level was the group who received an inservice on managing difficult behaviors (control group). There also was one within factor (time) with three levels. The first level corresponded to the data that was collected before the

inservice was presented. The second level corresponded to the data that was collected immediately after the inservices, and the third level corresponded to the data that was collected two weeks after the inservice was conducted. The dependent variable that was analyzed in this question addressed teachers' perceived comfort level about their knowledge of ADHD.

Results of this analysis yielded univariate results. The design and sample size obtained to conduct this repeated measures analysis makes the interpretation appropriate. According to Maxwell and Delaney (1990) as well as Stevens (2002), this type of analysis is robust against violations to normality and its *F*-test is only distorted when there is an extreme deviation from normality. The coefficients of Skewness and Kurtosis for the dependent variables in this research question mostly revealed small to moderate deviations from normality. In cases where extreme deviations from normality are present, effect sizes should be interpreted with caution. For example, extreme skewness in a distribution may produce larger or smaller effect sizes than those that exist in nature. Since an extreme deviation from normality was evidenced in Time 3 of the experimental group, statistically significant effects and effect sizes should be interpreted with caution.

An examination of the Descriptive information for research question one is presented in Table 4. Given that repeated measures ANOVA is robust against violations of normality, a greater emphasis should be placed on addressing issues dealing with sphericity. Therefore, before performing a univariate examination of this same analysis, it is typically considered best practice to examine whether or not the sphericity assumption has been violated (Stevens, 2002). A violation to the sphericity assumption

would indicate that the variance of the difference between the estimated means for any pair of treatment groups is not the same as for any other pair and requires a correction such as the Huynh-Feldt Epsilon, allowing the *p* values to be more accurate and adjusted upwards by reducing the degrees of freedom (Maxwell & Delaney, 1990). This, in turn, would protect the researcher against making a Type I error or rejecting the null when you should not have (Maxwell & Delaney, 1990). In other words, when the sphericity assumption is violated, the observed *F* value for the test is larger than what it should and tends to show significant differences when none exist. Figure 5 presents a graphical representation of the marginal means for teacher responses to this question across experimental conditions and time.

Table 4
Perceived Comfort Level about Knowledge of ADHD

	N	Time	Mean	SD	Skewness	SE_{skewn}	$Z_{skewn.}$	Kurtosis	SE_{Kurt}	Z_{kurt}
Control	66	1	4.12	.969	-.250	.295	-.85	-.090	.582	-.15
	66	2	4.38	.890	-.026	.295	-.09	-.110	.582	-.19
	66	3	4.08	1.01	-.522	.295	1.77	.375	.582	.64
Exper	67	1	4.09	.949	-.621	.293	-2.12	1.22	.578	2.11
	67	2	4.48	.841	-.478	.293	-1.63	.218	.578	.38
	67	3	4.28	.884	-1.14	.293	3.89*	1.88	.578	3.24*

* Statistically significant deviations from normality with Z-scores greater than 2.96 (α=.01)

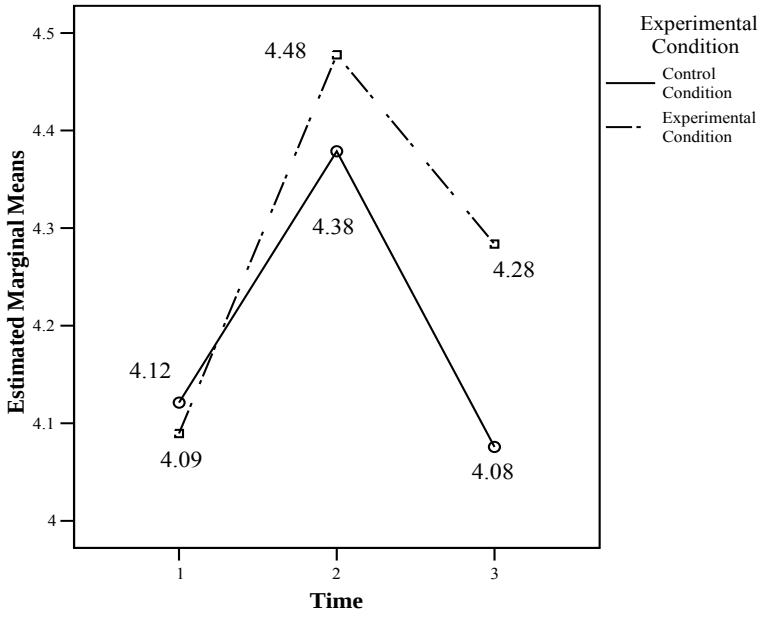

Figure 5
Mean Teacher Responses by Experimental Condition

The sphericity assumption in this analysis was examined by using Mauchly's W statistic and yielded a significant result (Mauchly's W = .885; $p < .01$) which indicates that the sphericity assumption was violated. This information is presented in Table 5.

Table 5
Test of Sphericity for Perceived Comfort Level about Knowledge of ADHD

					Epsilon		
	Mauchly's W	Chi-Square	df	*P*	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	.885	15.863	2	.000	.897	.916	.500

Given that the sphericity was violated, the Huynh-Feldt correction was interpreted. There was a significant within-subjects effect for the variable time ($F = 11.054$; $p < .01$) but not for the interaction of the variable time and experimental condition ($F = 1.390$; $p > .01$). The effect size for the variable time was small yielding a partial eta squared of .078. There were no significant between subjects effects found for the experimental condition ($F = .445$; $p > .01$). Table 6 and Table 7 illustrate the Within-subjects effects and Between-subjects effect respectively.

Table 6
Univariate Within-subjects Effect for Perceived Comfort Level about Knowledge of ADHD

		SS	df	Mean Square	*F*	*P*	Partial Eta Squared
Time	Sphericity Assumed	7.603	2.000	3.801	11.054	.000	.078
	Greenhouse-Geisser	7.603	1.794	4.238	11.054	.000	.078
	Huynh-Feldt	7.603	1.831	4.152	11.054	.000	.078
	Lower-Bound	7.603	1.000	7.603	11.054	.000	.078
T X G	Sphericity Assumed	.956	2.000	.478	1.390	.251	.010
	Greenhouse-Geisser	.956	1.794	.533	1.390	.251	.010
	Huynh-Feldt	.956	1.831	.522	1.390	.251	.010
	Lower-Bound	.956	1.000	.956	1.390	.251	.010
Error	Sphericity Assumed	90.097	262.00	.344			
	Greenhouse-Geisser	90.097	235.00	.383			
	Huynh-Feldt	90.097	239.87	.376			
	Lower-Bound	90.097	131.00	.688			

Table 7
Univariate Between-subjects Effect for Perceived Comfort Level about Knowledge of ADHD

	SS	Df	Mean Square	*F*	*P*	Partial Eta Squared
Group	.838	1	.838	.445	.506	.003
Error	246.876	131	1.885			

For this research question, it was hypothesized that the teachers' perceived comfort level about their knowledge of ADHD would significantly increase over time and be significantly greater for those teachers that receive the ADHD inservice (experimental group) than for those teachers that receive the managing difficult behaviors inservice (control group). Even though there was a significant effect for the variable time, overall, results of these analyses did not support the aforementioned hypothesis since teachers' perceived comfort level about their knowledge of ADHD increased for both the experimental and control groups.

Research Question Two

Does the knowledge level about ADHD as measured by the total score in the KADDS change significantly in Hispanic teachers after being provided with an inservice on the disorder?

In order to analyze research question two, a 2 x 3 repeated measures ANOVA also was used. There was one between factor (experimental condition) with two levels. The first level in the between factor was the group receiving the ADHD inservice (experimental group), while the second level was the group receiving an inservice on managing difficult behaviors (control group). There also was one within factor (time) with three levels. The first level corresponded to the data that was collected before the inservice was presented. The second level corresponded to the data that was collected immediately after the inservices, and the third level corresponded to the data that was collected two weeks after the inservice was conducted. The dependent variable that was analyzed in this question was based on teachers' responses to the KADDS. The total

score for the KADDS was used to compare the groups and is presented in Figure 6. Descriptive information with regard to the KADDS indicate that, for the most part, the data for this question only have small to moderate deviations from normality (skewness and kurtosis). However, given that some severe violations to normality were present in the dependent variables for research question two, statistically significant effects and effect sizes for this analysis should be interpreted with caution. Specifically, the distribution for Time 2 in the control group as well as the distributions in Time 2 and Time 3 of the experimental group deviated significantly from normality. Descriptive information for research question two is presented in Table 8.

Table 8
Descriptive Information for Teacher Knowledge of ADHD

	N	Time	Mean	SD	Skewness	SE_{skewn}	Z_{skewn}	Kurtosis	SE_{Kurt}	Z_{kurt}
Control	66	1	17.55	5.87	-.667	.295	-2.26	1.28	.582	2.19
	66	2	18.41	6.26	-.881	.295	-2.98*	1.03	.582	1.77
	66	3	17.14	6.61	-.846	.295	-2.87	.388	.582	.67
Experimental	67	1	17.60	4.77	-.301	.297	-1.01	-.388	.586	-.58
	67	2	22.40	4.99	-.903	.297	-3.04*	1.26	.586	2.14
	67	3	21.24	5.70	-1.55	.297	-5.30*	2.81	.578	4.86*

* Statistically significant deviations from normality with Z-scores greater than 2.96 (α=.01)

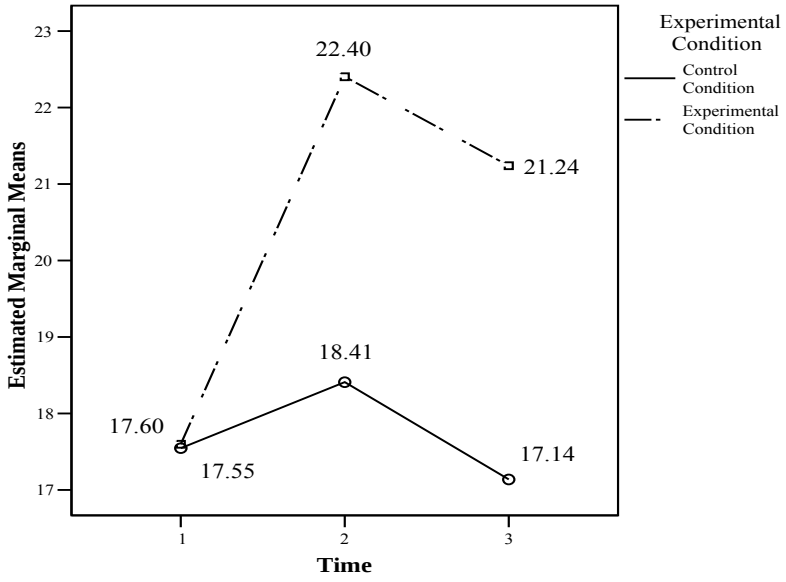

Figure 6
Mean Teacher Responses to KADDS by Experimental Condition

The sphericity assumption for research question two also was examined prior to interpreting the univariate results of the repeated measures analysis. Mauchly's W statistic was not statistically significant (Mauchly's W = .981; $p > .01$), indicating that the sphericity assumption was not violated. This information is presented in Table 9.

Table 9
Test of Sphericity for Teacher Knowledge of ADHD

					Epsilon		
	Mauchly's W	Chi-Square	df	*P*	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	.981	2.480	2	.289	.981	1.000	.500

Given that the sphericity was not violated, no correction was necessary. There was a significant within-subjects effect for both the variable time ($F = 21.465$; $p < .01$) and the interaction of the variable time and experimental condition ($F = 14.137$; $p < .01$). The within subject effect sizes for these two effects were small yielding a partial eta squared of .141 for the main effect (time) and a partial eta squared of .097 for the interaction effect (time and experimental condition). There also was a significant between subjects main effect found for the experimental condition ($F = 10.015$; $p < .01$). This effect yielded a small partial eta squared of .071. Table 10 and Table 11 illustrate the Within-subjects effects and Between-subjects effect respectively.

Table 10
Univariate Within-subjects Effect for Teacher Knowledge of ADHD

		SS	df	Mean Square	*F*	*P*	Partial Eta Squared
Time	Sphericity Assumed	537.880	2.000	268.940	21.465	.000	.141
	Greenhouse-Geisser	537.880	1.963	274.022	21.465	.000	.141
	Huynh-Feldt	537.880	2.000	268.940	21.465	.000	.141
	Lower-Bound	537.880	1.000	537.880	21.465	.000	.141
T X G	Sphericity Assumed	354.241	1.963	177.121	14.137	.000	.097
	Greenhouse-Geisser	354.241	2.000	180.468	14.137	.000	.097
	Huynh-Feldt	354.241	1.000	177.121	14.137	.000	.097
	Lower-Bound	354.241	1.963	354.241	14.137	.000	.097
Error	Sphericity Assumed	3282.631	262.000	12.529			
	Greenhouse-Geisser	3282.631	257.141	12.766			
	Huynh-Feldt	3282.631	262.000	12.529			
	Lower-Bound	3282.631	131.000	25.058			

Table 11
Univariate Between-subjects Effect for Teacher Knowledge of ADHD

	SS	df	Mean Square	*F*	*P*	Partial Eta Squared
Group	765.761	1	735.761	10.015	.002	.071
Error	9623.878	131	73.465			

For this research question, it was hypothesized that the teachers' knowledge level about their knowledge of ADHD as measured by the KADDS would significantly increase over time and be significantly greater for those teachers that receive the ADHD

inservice (experimental group) than for those teachers that receive the managing difficult behaviors inservice (control group). Results of these analyses did support the aforementioned hypothesis since teachers' knowledge level of ADHD differentially increased for both the experimental and control groups over time.

Research Question Three

Is there a change in referral patterns after inservice training?

In order to analyze research question three, a 2 x 2 x 3 repeated measures ANOVA also will be used. There were two between factors (experimental condition and student ethnicity) with two levels. The first level in between factor one was the group receiving the ADHD inservice (experimental group), while the second level was the group receiving an inservice on managing difficult behaviors (control group). The first level in between factor two (student ethnicity) corresponded to teachers who received vignettes describing a Hispanic child, while the second level corresponded to teachers who received vignettes describing a Caucasian child. The within factor (time) had three levels. The first level corresponded to the data that was collected before the inservice was presented. The second level corresponds to the data that was collected immediately after the inservices, and the third level corresponds to the data that was collected two weeks after the inservice was conducted. The dependent variable that was analyzed in this question was a teachers' decision to refer the child described in the vignettes. Descriptive information with regard to special education referral indicate that, for the most part, the data for this question only have small to moderate deviations from normality (skewness and kurtosis). However, given that some severe violations to

normality were present in the dependent variables for research question three, effect sizes for this analysis should be interpreted with caution. Specifically, the distribution for teachers who received the Hispanic student vignette and who were in the experimental group at Time 1 as well as the distribution for teachers who received the Caucasian student vignette and who were in the control group at Time 2 deviated significantly from normality. Descriptive information for research question three are presented in Table 12 and Table 13. Figure 7 and Figure 8 present a graphical representation of the marginal means for teacher responses to referring students in the vignette for special education by experimental condition and by student ethnicity respectively.

Table 12
Descriptive Information Regarding Student Special Education Referral

	Student Ethnicity	Group	N	Mean	SD
Special Education Referral – Time 1	Caucasian	Control	31	1.61	.495
		Experimental	37	1.70	.463
		Total	68	1.66	.477
	Hispanic	Control	35	1.63	.490
		Experimental	30	1.77	.430
		Total	65	1.70	.465
	Total	Control	66	1.62	.489
		Experimental	67	1.74	.447
		Total	133	1.68	.470
Special Education Referral – Time 2	Caucasian	Control	31	1.84	.374
		Experimental	37	1.49	.507
		Total	68	1.66	.481
	Hispanic	Control	35	1.51	.507
		Experimental	30	1.70	.466
		Total	65	1.61	.494
	Total	Control	66	1.68	.475
		Experimental	67	1.59	.497
		Total	133	1.62	.486
Special Education Referral – Time 3	Caucasian	Control	31	1.61	.495
		Experimental	37	1.54	.505
		Total	68	1.58	.498
	Hispanic	Control	35	1.57	.502
		Experimental	30	1.73	.450
		Total	65	1.65	.482
	Total	Control	66	1.59	.495
		Experimental	67	1.64	.487
		Total	133	1.61	.490

Table 13
Coefficients of Skewness and Kurtosis for Special Education Referral

	Student Ethnicity	Group	Skewness	SE_{skewn}	Z_{skewn}	Kurtosis	SE_{skewn}	Z_{kurt}
Spec. Educat. Referral – Time 1	Caucasian	Control	-.487	.421	-1.16	-1.889	.821	-2.30
		Experimental	-.925	.388	-2.38	-1.213	.759	-1.60
	Hispanic	Control	-.556	.398	-1.40	-1.797	.778	-2.31
		Experimental	-1.328	.427	-3.11*	-.257	.833	-0.31
Spec. Educat. Referral – Time 2	Caucasian	Control	-1.937	.421	-4.60*	1.868	.821	2.28
		Experimental	.056	.388.	0.14	-2.114	.759	-2.79
	Hispanic	Control	-.060	.398	-0.15	-2.121	.778	-2.73
		Experimental	-.920	.427	-2.15	-1.242	.833	-1.49
Spec. Educat. Referral – Time 3	Caucasian	Control	-.487	.421	-1.16	-1.889	.821	-2.30
		Experimental	-.170	.388	-0.44	-2.087	.759	-2.75
	Hispanic	Control	-.302	.398	-0.76	-2.028	.778	-2.61
		Experimental	-1.112	.427	-2.60	-.824	.833	-0.99

* Statistically significant deviations from normality with Z-scores greater than 2.96 (α=.01)

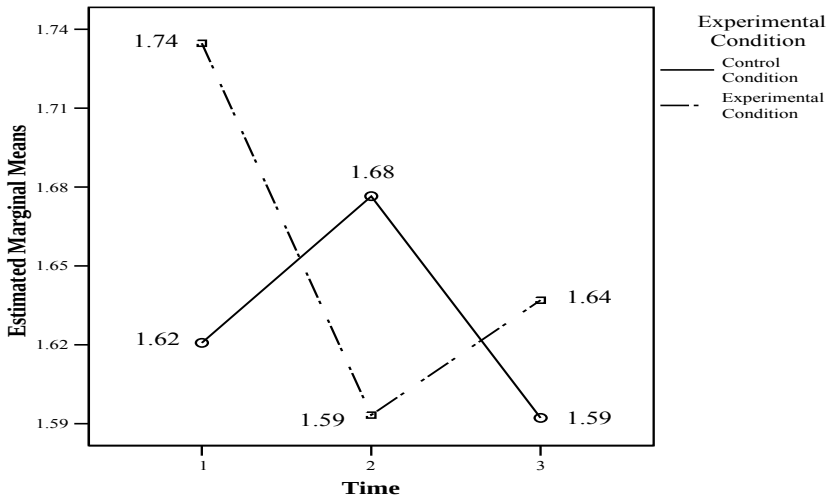

Figure 7
Mean Teacher Responses for Special Education Referral by Experimental Condition

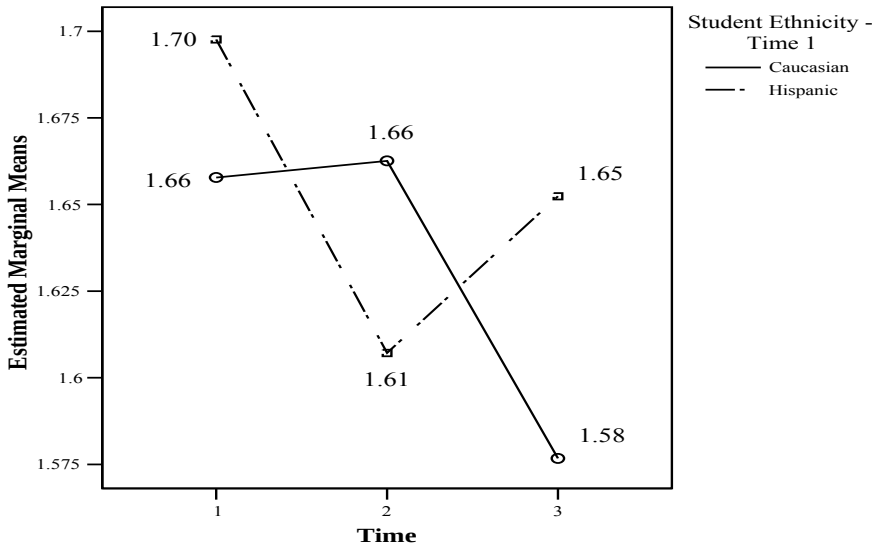

Figure 8
Mean Teacher Responses for Special Education Referral by Student Ethnicity

Similar to the aforementioned research questions, results of this analysis also yielded univariate results. The sphericity assumption for research question three also was examined prior to interpreting the univariate results of the repeated measures analysis. Mauchly's W statistic was not significant (Mauchly's W = .999; $p > .01$), indicating that the sphericity was not violated this data set. This information is presented in Table 14.

Table 14
Test of Sphericity for Special Education Referral

					Epsilon		
	Mauchly's W	Chi-Square	df	*p*	Greenhouse-Geisser	Huynh-Feldt	Lower-bound
Time	.999	.075	2	.963	.999	1.000	.500

Given that the sphericity was not violated, information was interpreted without a need for correction. There were no significant within-subjects main or interaction effects. The main effect for the variable time yielded a non-significant *F*-value of 1.166 ($p > .01$). The two-way interaction effect of the variable time and experimental condition yielded a non-significant *F*-value of 2.806 ($p > .01$). The two-way interaction effect of the variable time and student ethnicity yielded a non-significant *F*-value of 1.287 ($p > .01$). The three-way interaction effect of the variable time, experimental condition, and student ethnicity yielded a non-significant *F*-value of 4.281 ($p > .01$). Table 15 illustrates the within-subjects univariate effects.

Table 15
Univariate Within-subjects Effect for Special Education Referral

		SS	df	Mean Square	*F*	*P*	Partial Eta Squared
Time	Sphericity Assumed	.274	2.000	.137	1.166	.313	.009
	Greenhouse-Geisser	.274	1.999	.137	1.166	.313	.009
	Huynh-Feldt	.274	2.000	.137	1.166	.313	.009
	Lower-Bound	.274	1.000	.274	1.166	.282	.009
T X R	Sphericity Assumed	.303	2.000	.152	1.287	.278	.010
	Greenhouse-Geisser	.303	1.999	.152	1.287	.278	.010
	Huynh-Feldt	.303	2.000	.152	1.287	.278	.010
	Lower-Bound	.303	1.000	.303	1.287	.259	.010
T X G	Sphericity Assumed	.661	2.000	.330	2.806	.062	.021
	Greenhouse-Geisser	.661	1.999	.331	2.806	.062	.021
	Huynh-Feldt	.661	2.000	.330	2.806	.062	.021
	Lower-Bound	.661	1.000	.661	2.806	.062	.021
T X R X G	Sphericity Assumed	1.008	2.000	.504	4.281	.015	.032
	Greenhouse-Geisser	1.008	1.999	.504	4.281	.015	.032
	Huynh-Feldt	1.008	2.000	.504	4.281	.015	.032
	Lower-Bound	1.008	1.000	1.008	4.281	.041	.032
Error	Sphericity Assumed	30.381	258.000	.118			
	Greenhouse-Geisser	30.381	257.848	.118			
	Huynh-Feldt	30.381	258.000	.118			
	Lower-Bound	30.381	129.000	.236			

Also, there were no significant between-subjects main or interaction effects. The main effect for the experimental condition yielded an *F*-value of .140 ($p > .01$) while the main effect for student ethnicity yielded an *F*-value of .089 ($p > .01$). The two-way interaction of experimental condition and student ethnicity yielded an *F*-value of 4.140 ($p > .01$). Table 16 illustrates the Between-subjects effects respectively.

Table 16
Univariate Between-subjects Effect for Teacher Knowledge of ADHD

	SS	Df	Mean Square	*F*	*P*	Partial Eta Squared
Race	3.963 E-02	1	3.963 E-02	.089	.766	.001
Group	6.265 E-02	1	6.265 E-02	.140	.709	.001
R X G	1.852	1	1.852	4.140	.044	.031
Error	57.704	129	.447			

For this research question, it was hypothesized that teachers who received the inservice for ADHD would significantly refer more students for special education than those teachers who receive the managing difficult behaviors inservice after the presentation. Moreover, it also was hypothesized that teachers would significantly refer more Caucasian children to special education than their Hispanic counterparts. Results of these analyses did not support either of the two aforementioned hypotheses. Teachers who received the ADHD inservice did not refer children at a significantly higher rate in

the study over time. Also teachers, overall, did not refer more Caucasian children to special education than Hispanic children over time.

Summary of the Results

Three research questions were posed and answered in this study. The first question involved determining the effects of an inservice training specifically dealing with ADHD on the comfort level of teachers' knowledge of ADHD. A 2 x 3 repeated measures analysis was conducted to answer this question with the between-subjects factor being the type of inservice teachers received and the within-subjects factor being time. It was hypothesized that the teachers' perceived comfort level about their knowledge of ADHD would significantly increase over time and be significantly greater for those teachers that receive the ADHD inservice than for those teachers that receive the managing difficult behaviors inservice. Results of this analysis yielded a significant univariate effect for the variable time, meaning that teachers' comfort level regarding their own knowledge of ADHD increased over time regardless of the type of inservice they received. Even though there was a significant effect for the variable time, overall, results of these analyses did not support the hypothesis posited in research question one since teachers' perceived comfort level about their knowledge of ADHD increased for both the experimental and control groups.

The second research question involved determining the effects of an inservice training specifically dealing with ADHD on the actual teacher knowledge of ADHD. A 2 x 3 repeated measures analysis also was conducted to answer this question with the between-subjects factor being the type of inservice teachers received and the within-

subjects factor being the variable time. It was hypothesized that the teachers' knowledge level about their knowledge of ADHD as measured by the KADDS would significantly increase over time and be significantly greater for those teachers that receive the ADHD inservice than for those teachers that receive the managing difficult behaviors inservice. Results of this analysis yielded a univariate effect for the variable time as well as the interaction of the variable time and the experimental condition. This result implies that teachers who received the inservice of ADHD (experimental group) experienced a differential gain of knowledge of ADHD over time when compared to those teachers that received an inservice on managing difficult behaviors (control group). Therefore, the results of these analyses did support the posited hypothesis since teachers' knowledge level of ADHD differentially increased for both the experimental and control groups over time.

The third and last research question involved determining the effects of an inservice training specifically dealing with ADHD on teacher referral pattern of Hispanic and Caucasian students to special education. A 2 x 2 x 3 repeated measures analysis was conducted to answer this question with the first between-subjects factor being the type of inservice teachers received, the second between-subject factor being the student ethnicity, and the within-subjects factor being the variable time. It was hypothesized that teachers who received the inservice for ADHD (experimental group) would significantly refer more students for special education than those teachers who receive the managing difficult behaviors inservice (control group) after the presentation. Moreover, it also was hypothesized that teachers would significantly refer more Caucasian children to special

education than their Hispanic counterparts. No statistically significant results were found in the univariate analyses. This result indicates that teachers did not refer children for special education any differently regardless of the inservice that they received and regardless of the student ethnicity. Therefore, no support was found for any of the two hypotheses posited in question three. Teachers who received the ADHD inservice did not refer children at a significantly higher rate in the study over time. Also teachers, overall, did not refer more Caucasian children to special education than Hispanic children over time.

CHAPTER V

CONCLUSIONS

Summary and Discussion

According to the U.S. Office of Special Education and Rehabilitation Services (OSERS) (2003), Attention Deficit/Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder that affects the brain circuitry of an individual, resulting in problems with inattention and hyperactivity-impulsivity. According to Morantz (2006), nearly 4.4 million children from age four to seventeen years of age were diagnosed as having ADHD. Research suggests that by the time children with ADHD reach adulthood they have attained lower grades, have failed more courses, have a higher retention rate, have higher dropout rates and overall have been less educated than their non-ADHD counterparts.

In order to increase the probability of success for these children, the federal government enacted federal statutes that ensure that state and local educational agencies address the needs of children with ADHD, creating the avenues for children to reach their full potential in an effort to avoid the aforementioned trajectories. Children with ADHD may be protected by three federal statutes: Section 504 of the Rehabilitation Act of 1973 (Section 504), the Americans with Disabilities Act of 1990 (ADA), and the Individuals with Disabilities Education Improvement Act, Part B (IDEIA). The implementation of these statutes, the federal government delegates its responsibility and makes each state accountable for these children.

Much like the federal government delegates its responsibility for implementing IDEIA to the states, each of the states delegate responsibility to the schools and their personnel within that particular state. The identification of students with disabilities in the school system usually begins with teachers noticing some sort of academic, behavioral, or emotional difficulty that prevents the student from making the expected educational gains (Gottlieb et al., 1991). Thus, teachers typically initiate the special education referral process (Frankenberger et al., 1990; Lloyd et al., 1991; Gottlieb et. al., 1991). A study conducted by Vereb and DiPerna (2004) indicates that teachers are usually the first to notice and refer children who are suspected of having ADHD for assessment and/or treatment. Therefore, it is important that teachers are well educated with regard to the symptomatology of this particular disability, especially since teachers are expected to implement, evaluate, and support treatments for children with ADHD (Hawkins et al., 1991).

Research seems to suggest that teachers are more likely to refer students with externalizing behavior problems than with internalizing behavior problems (Greene et al., 1996; Lloyd et al., 1991). One study found that 62% of clinic referrals for suspected ADHD were not confirmed as ADHD cases (Desgranges et al., 1995). This high referral rate poses a significant problem for the overidentification of students with ADHD in special education given that a great majority of students who are referred for special education (75% to 90%) are placed in a special education settings (Algozzine et al., 1982).

Having a diagnostic label such as ADHD has practical implications for children in the classroom. For example, when teachers have negative expectations of children as a result of their diagnostic label, as in the case of children with ADHD, they will also tend to criticize them more, demand less of them, call on them infrequently, and praise them less (Bekle, 2004). In addition, Bay & Bryan (1991) and Li (1985) found that teachers attitudes towards students are generally more negative when children have a diagnostic label than when they are perceived to be average in their overall achievement and abilities. For this reason, teachers should be careful not to further complicate the lives of children with ADHD or suspected ADHD either consciously or unconsciously since teacher expectations influence their subsequent actions (Hepperlen et al., 2002).

Shapiro and DuPaul (1993) have pointed out that lack of teacher knowledge about ADHD is one of the greatest obstacles in attending to the needs of this population. Teacher education is not only important for the prevention of high referral rates for special education, but it also is important in order for teachers to adequately meet the needs of their students, especially for children who suffer from ADHD since it negatively affects their academic outcome (DuPaul et al., 1991; Barkley et al., 1993).

The factors influencing teacher perception of students and their subsequent referral rate are only exacerbated when cultural and linguistic diversity is taken into account. Arcia et al. (2000) state that the identification of children with ADHD becomes problematic in cases where English is a student's second language. Research suggests that students with limited English proficiency continue to be over-referred for special education (Figueroa, 1989; Ortiz, 1988). According to Carlson & Stephens (1986) and

Mehan et al. (1986) teachers are also more likely to perceive the same behavior as being different when the ethnicity of the student was different from that of the teacher.

Given that both culture and language are risk factors for being inaccurately referred for special education; more research needs to be conducted to address this important issue. For example, no studies currently exist that examine the perception of Hispanic teachers regarding the referral of monolingual English-speaking children and English-Spanish bilingual Hispanic children suspected of having ADHD to special education. Therefore, the purpose of this study was to examine Hispanic teacher perceptions of off-task behaviors and to investigate factors that could influence teachers' decisions to refer these children to special education.

Three research questions were posed and answered in this study. The first question involved determining the effects of an inservice training specifically dealing with ADHD on the comfort level of teachers' knowledge of ADHD. In analyzing the pattern of responses across all three times, it would appear that the perceived comfort level for teachers about their knowledge of ADHD appears to be initially similar at time 1 (before the inservice), increases at time 2 (after the inservice), and decreases at time 3 (two-weeks after the inservice). The mean level of perceived comfort regarding their own knowledge of ADHD for teachers receiving the inservice on ADHD (the experimental group) across all three time periods is as follows: 4.09 (before the inservice), 4.48 (after the inservice), and 4.28 (two weeks after the inservice). The mean level of perceived comfort regarding their own knowledge of ADHD for teachers receiving the inservice on managing difficult behavior (the control group) across all

three time periods is as follows: 4.12 (before the inservice), 4.38 (after the inservice), and 4.08 (two weeks after the inservice). A visual analysis of the mean levels for both conditions across all three time periods indicate an increase in teacher comfort level immediately after the inservice but not two weeks after the inservice (Figure 5). The results of the univariate analysis are consistent with the visual analysis and indicate that there was a significant increase in a teacher's perceived comfort level about their knowledge of ADHD over time regardless of whether they received the inservice about ADHD or the inservice (experimental group) about managing difficult behaviors (control group). It is interesting to note that, on average, Hispanic teachers in both the control group and the experimental group consistently rated themselves as feeling "somewhat comfortable" with their own knowledge of ADHD before the inservice, after the inservice and three weeks after the inservice. It is possible that myths and hearsay commonly disseminated throughout a school about children with ADHD may make Hispanic teachers feel comfortable with their perceived level of knowledge of ADHD to begin with. Also, Hispanic teachers receiving knowledge about ADHD (experimental group) or on managing difficult behavior (control group) temporarily but significantly increased their comfort level about their perceived knowledge of ADHD since participants completed the question regarding this issue shortly after the presentation. Having recently acquired knowledge on either ADHD (experimental group) or on managing difficult behavior (control group) may have made teachers feel more comfortable with their perceived knowledge about ADHD. It is speculated that this significant increase was only temporary (after the inservice) since details about the

inservice received by teachers in either the experimental or control groups may have been forgotten given that a two week period had elapsed as seen in Figure 5. Alternatively, a Hawthorne effect may have been present and could have affected teacher response patterns. In other words, given that teachers received increased attention from their peers as well as the experimenter, they may have inadvertently given more socially desirable responses once they were presented with an inservice (ADHD or managing difficult behavior) (Shadish, Cook & Campbell, 2002). However, since the information received immediately after the inservice may have been forgotten two weeks after the inservice, the comfort level reported by teachers closely resembled that of time 1 (before the inservice).

The second research question involved determining the effects of an inservice training specifically dealing with ADHD on the actual knowledge of ADHD possessed by Hispanic teachers. In analyzing the pattern of responses across all three times, it would appear that the amount of knowledge possessed by teachers about ADHD is practically identical at time 1 (before the inservice), increases at time 2 (after the inservice), and decreases at time 3 (two-weeks after the inservice). The mean level of knowledge of ADHD for teachers receiving the inservice on ADHD (experimental group) across all three time periods is as follows: 17.60 (48.9% correct; $\sigma = 4.77$; before the inservice), 22.40 (62.2% correct; $\sigma = 4.99$; after the inservice), and 21.24 (59% correct; $\sigma = 5.70$; two weeks after the inservice). On average, teachers who received the ADHD inservice (experimental group) gained approximately 4 points (e.g. four correct answers). The mean level of knowledge of ADHD for teachers receiving the inservice on

managing difficult behavior (control group) across all three time periods is as follows: 17.55 (48.8% correct; $\sigma = 5.87$; before the inservice), 18.41 (51.1% correct; $\sigma = 6.26$; after the inservice), and 17.14 (47.6% correct; $\sigma = 6.61$; two weeks after the inservice).

A visual analysis of the mean levels for both conditions across all three time periods indicate a differential increase in teacher knowledge level about ADHD (Figure 6). Univariate statistical analyses are consistent with the visual analysis and indicate that those teachers that received the inservice on ADHD (experimental group) gain a statistically significant greater amount of knowledge after the inservice than those teachers that received the inservice on managing difficult behaviors (control group). Moreover, it is interesting to note that those teachers that received the inservice on ADHD (experimental group) appear to have retained the information they gained during the inservice two weeks after inservice had taken place. The small gain in knowledge about ADHD demonstrated by teachers that received the inservice on managing difficult behaviors (control group) appears to have been lost two weeks after the inservice.

This result indicates that Hispanic teachers who received the inservice of ADHD (experimental group) experienced a differential gain of knowledge of ADHD over time when compared to those teachers that received an inservice on managing difficult behaviors (control group). On average, teachers who received the ADHD inservice gained approximately 4 points (correct answers) over those teachers that received the training on managing difficult behaviors. However, despite this gain, Hispanic teachers in the control group and Hispanic teachers in the experimental group answered approximately 50% or less of the items on the KADDS correctly. This finding is

consistent with that of Pfiffner and Barkley (1990) as well as Sciutto et al. (2000) in which they state that teachers have a poor grasp of the nature, course, causes, and outcomes of ADHD. This result has a significant implication for students with ADHD since it is likely that these teachers will possess little knowledge about the disorder, and hence, about appropriate academic and/or behavioral interventions in the classroom. This, in turn, may jeopardize the academic trajectory and future well-being of these children as suggested by DuPaul et al. (1991) and in Barkley et al. (1993).

The third and last research question involved determining the effects of an inservice training specifically dealing with ADHD on teacher referral pattern of Hispanic and Caucasian students to special education. In analyzing the pattern of responses given by teachers with respect to whether or not they would refer the child for special education, it would seem that, on average, teachers in both groups referred the child at approximately the same rate across time regardless of the inservice the teachers received. The mean referral rate for teachers receiving the inservice on ADHD (experimental group) across all three time periods is as follows: 1.74 (before the inservice), 1.59 (after the inservice), and 1.64 (two weeks after the inservice. The mean referral rate for teachers receiving the inservice on managing difficult behavior (control group) across all three time periods is as follows: 1.62 (before the inservice), 1.68 (after the inservice), and 1.59 (two weeks after the inservice). The differences in the means for both the experimental and control groups are quite small, involving less than a tenth of a point difference in most cases.

Nevertheless, to place these numbers into context, it is important to examine the frequencies of teacher referral in both experimental groups. Before the inservice, 18 teachers in the experimental group (26.9%) said that they would refer the child for special education, while 49 teachers (73.1%) said that they would not refer the child. In the control condition, 25 teachers (37.9%) said they would refer the child for special education, while 41 teachers (62.1%) said they would not. After the inservice, 28 teachers in the experimental group (41.8%) said that they would refer the child for special education, while 39 teachers (58.2%) said that they would not. In the control group, 22 teachers (33.3%) said they would refer the child for special education, while 44 teachers (66.7%) said they would not. Two weeks after the inservice, 25 teachers in the experimental group (37.3%) said they would refer the child for special education, while 42 teachers (62.7%) said they would not. In the control condition, 27 teachers (40.9%) said that they would refer the child for special education, while 39 (59.1%) said they would not.

The following reported frequencies correspond to the aforementioned mean levels in (Figure 7). The number of teachers that did not refer the child for special education after receiving the ADHD inservice (experimental group) changed from 49 (before the inservice) to 39 (after the inservice) to 42 (two weeks after the inservice). The number of teachers that did not refer the child for special education after receiving the inservice on managing difficult behavior (control group) changed from 41 (before the inservice) to 44 (after the inservice) to 39 (two weeks after the inservice). The close

similarity in the referral pattern of both experimental conditions can easily explain why no statistical significance was found in the univariate analyses.

A closer examination into the referral rate of teachers by student ethnicity also reveals that, on average, teachers receiving either the Hispanic or Caucasian student vignette referred the child at approximately the same rate across time. The mean referral rate for teachers receiving a Hispanic student across all three time periods is as follows: 1.66 (before the inservice), 1.66 (after the inservice), and 1.65 (two weeks after the inservice. The mean referral rate for teachers receiving a Caucasian student across all three time periods is as follows: 1.70 (before the inservice), 1.61 (after the inservice), and 1.65 (two weeks after the inservice). The differences for both conditions across time are nearly unperceivable, in most cases involving less than one tenth of a point difference.

Nevertheless, to place these numbers into context, it is important to examine the frequencies of teacher referral in both conditions. Before the inservice, 20 teachers receiving the Hispanic student vignette (30.8%) said that they would refer the child for special education, while 45 teachers (69.2%) said that they would not refer the child. In the case of teachers receiving the Caucasian student vignette, 23 teachers (33.8%) said they would refer the child for special education, while 45 teachers (66.2%) said they would not. After the inservice, 26 teachers receiving the Hispanic student vignette (40%) said that they would refer the child for special education, while 39 teachers (60%) said that they would not. In the case of teachers receiving the Caucasian student vignette, 24 teachers (35.3%) said they would refer the child for special education, while 44 teachers

(64.7%) said they would not. Two weeks after the inservice, 23 teachers receiving the Hispanic vignette (35.4%) said they would refer the child for special education, while 42 teachers (64.6%) said they would not. In the case of teachers receiving the Caucasian student vignette, 29 teachers (42.6%) said that they would refer the child for special education, while 39 (57.4%) said they would not.

The following reported frequencies correspond to the mean levels in Figure 8. The number of teachers that did not refer the Hispanic child for special education changed from 45 (before the inservice) to 39 (after the inservice) to 42 (two weeks after the inservice). The number of teachers that did not refer the Caucasian child for special education changed from 45 (before the inservice) to 44 (after the inservice) to 39 (two weeks after the inservice). As with the experimental condition, there also is a close similarity in the number of teachers referring Hispanic and Caucasian students for special education and explains the reason for the lack of statistical significance in the univariate analyses.

These result indicates that Hispanic teachers did not refer children for special education any differently regardless of the inservice that they received and regardless of the student ethnicity. This finding contradicts studies conducted by Tobias et al. (1982) in which they found that teachers rated students who were not from their ethnic background as being more appropriate for placement into special education. Moreover, the results of this study are consistent with the findings in Tobias et al. (1983) where they failed to replicate their earlier findings. It is possible that teachers who are from a Hispanic background may tend to have a greater awareness of the role culture and

language plays in making a referral for special education, and therefore, takes such factors into account when making that decision. Moreover, having this knowledge may prompt Hispanic teachers to be more cautious when making a referral and may explain why teachers did not significantly refer more Hispanic students than Caucasian students. It also is possible that teachers who perceive themselves as being comfortable with their own knowledge of ADHD, like the teachers in this sample, may also feel more empowered and competent to accommodate students who present with difficult behaviors without needing special education interventions.

Limitations of the Study

This study has several limitations. One limitation is that the accessible population from which the sample was obtained may not generalize to the target population. The sample of Hispanic teachers was obtained from a small school district in South Texas. Given the racial and linguistic diversity that exists within the Hispanic culture, it is unlikely that the results found in the study can be generalized to all Hispanics within the United States. A second limitation to the study was the sample size. This study only included 133 participants, which may not make the results of this study generalizable to the population at large. Additionally, a larger sample size will more closely approximate the normal distribution and would allow for a more accurate interpretation of effect sizes. Furthermore, the inferences drawn from this study may be suspect since lower sample sizes tend to yield greater margins of sampling error. A third limitation to the study involves the materials used for the study. All of the participants received the same form of the self-perception questionnaire and the KADDS. It is likely that the results of

this study could have been marred by repeated testing, creating both exposure effects as well as memory effects. A fourth limitation to the study is maturation. Shadish, Cook and Campbell (2002) suggest that the internal validity of a study can be threatened when fatigue is produced as a result of the experiment since participant responses may change as a result. Most participants attended the inservice after school and may have become increasingly tired throughout the duration of the pre-post procedures, especially since they were asked to read and complete several forms in addition to attending to the inservice. A fifth limitation to the study involves the case vignettes used in the study. Even though the case vignettes contained information and behaviors directly obtained from the ADHD symptoms found in the DSM-IV, they were not evaluated by either experts in the field or by teachers prior to the study to determine if the information presented was sufficient for teachers to initiate special education referral. The sixth and final limitation to the study was the possible presence of a Hawthorne effect where participating teachers may have produced socially desirable responses, especially when asked about their perceptions about their knowledge of ADHD.

Implications for Practice

One of the functions of school psychologists is to educate and disseminate information regarding behavioral disorders as well as academic and/or behavioral interventions. Results of this study indicate that there were some positive effects to receiving information about ADHD by means of a teacher inservice. Recent changes to legislation, particularly those related to the implementation of IDEIA 2004, mandate that school districts implement research based practices and interventions as a requirement

for finding a child eligible for special education. Providing teacher inservices containing the latest research on topics such as ADHD may partially fulfill the school psychologist's role in executing school-wide preventative efforts. This, in turn, allows teachers and other relevant school personnel to more accurately identify students who may be at-risk and in need of more targeted interventions. This current change in legislation also expands the role of the school psychologist by creating an avenue for him/her to participate in a more proactive role instead of the traditional (test and place) role. School psychologists are encouraged to educate children, parents, and school personnel, so that through a greater awareness, the well-being of those individuals with disabilities can be better safeguarded. Furthermore, school psychologists may want to monitor the pattern of teacher referrals of students to special education to ensure that all student variables have been carefully examined before the referral is made (e.g., monitor patterns of student ethnicity in special education referrals, monitor inappropriate special education referrals, monitor high rate of student referrals for special education, etc.). Following this practice may reduce the high referral rates experienced in some public schools.

Recommendations for Future Research

Additional research in this area is vital in order to be able to more precisely pinpoint the critical factors that influence the referral of culturally and linguistically diverse students into special education. Replication studies that include greater sample sizes and representation of teachers from other pockets of the United States that share the Hispanic culture will be necessary to ensure that the results found in this study are

generalizable to Hispanic teachers nationwide. Given that the literature on Hispanic students and ADHD is scarce, researchers are encouraged to consider student variables that were not included in this investigation such as migrant status, language proficiency in English and Spanish as well level of acculturation.

These factors affect the daily lives of many Hispanic students and may negatively influence the perception of teachers regarding the students' academic and behavioral performance in the classroom. In addition, with the growing need for research based practices, researchers may want to focus their efforts in creating instruments to monitor the progress of students who have received an intervention. If this is done in both an effective and efficient manner, it could minimize the resources invested by school personnel and would be of great service to them. Researchers are also encouraged to replicate studies regarding effective interventions while using culturally and linguistically diverse samples due to the fact that there is a preponderance of literature supporting their Caucasian counterparts.

Given that the population of students in American schools is becoming more culturally and linguistically diverse, it is only logical to assume the number of teachers that teach these children has also increased. For this reason, research should also be aimed at ethnically diverse teachers given that literature is scarce with regard to their perceptions of student academic and behavioral performance. Lastly, federal and state agencies may want to facilitate the research that is conducted on ADHD by asking public schools as well as other public institutions to report data on the number of children who have been classified as ADHD and receive services under the OHI label. In

doing so, researchers can have access to this information and may look for emerging patterns in the data and may also be able to identify critical factors, especially in the case of children with culturally and linguistically diverse backgrounds.

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APPENDIX A

INSTRUCTIONS AND CONSENT

Dear Teacher:

My name is Noe Ramos Jr. and I am a fourth year doctoral candidate at Texas A&M University's School Psychology Program. I am interested in studying Hispanic teachers' perception of a student's difficult behavior. I am extremely grateful to you for taking time out of your busy schedule. As an educator working in a predominantly Hispanic school district, you have been selected to participate in this research study. The purpose of this study is to gain a better understanding of teacher perceptions and knowledge with respect to behavioral difficulties commonly found in students.

It is expected that approximately 140 of your colleagues will also be participating in this study. If you choose to participate, consent to participate (your signature) at the bottom of this page will be required. Part I of this study will consist of completing a demographic questionnaire, reading one short vignette as well as two separate questionnaires that will ask you about your knowledge and comfort level in working with children who display difficult behaviors. It should take 10-15 minutes to complete read the vignette and complete the questionnaires. Part II of the project requires attendance to a 20-25 minute inservice that will be provided by the investigator. Part III of the project entails the participant to read another vignette and complete another brief questionnaire. The requested information should take approximately 10 minutes to complete. Part IV of the investigation calls for the participant to read a third vignette and complete another questionnaire two weeks after the inservice. Again, this process should only take about 10 minutes to complete.

There are no risks to you by participating in this study nor will there be any tangible compensation provided for your participation. Your privacy and records will be kept confidential to the extent of the law and in **no** way be disclosed to your employer, colleagues, parents and/or students. The results of this study may be published although any data/information that will be obtained from you will remain confidential and will be combined with data from other teachers in the publication. Any and all published results will not include your name or any other information that would in **any** way personally identify you. Only group data will be reported. The researcher will be the only one to have access to that information. Any and all data that is collected if you choose to participate will be kept in a locked file cabinet and only the principal investigator will have access to it. If you would like a copy of the results once the study is completed, please feel free to contact me (information provided below).

When completing these questions, please be as truthful as possible and please do not leave any items blank. Please answer each section of the study independently and do not share your assigned case vignettes with your colleagues until the completion of the study. It should be noted that this study will be the basis of my dissertation. Furthermore, and more importantly, this investigation is an exploratory one such that no other study currently exists and will be the first of its kind. For this reason, it is vital that

you participate and keep true to the procedures outlined above. I am trying to learn more about your own perceptions, attitudes, knowledge, and opinions.
Your decision to participate in this research study is completely voluntary. You are free to participate in this research study or to withdraw at any time including if any questions make you feel uncomfortable. If you choose not to participate, or if you withdraw, there will be no penalty or loss of any kind. Additionally, your teaching or job status will in **no** way be affected by your decision to participate or not participate. You will be provided with a copy of this consent form for you records.

If you would like to receive the results of this study, would like a copy of this consent form, have any questions regarding its content, or would like additional information, please contact Noe Ramos via telephone at (956) 239-1306 or via e-mail at noeramos@tamu.edu. Information also can be obtained from Dr. Constance Fournier or Dr. Michael Ash via telephone at (956) 845-1831.

This research study has been reviewed by the Institutional Review Board - Human Subjects in Research, Texas A&M University. For research-related problems or questions regarding subjects' rights, you can contact the Institutional Review Board through Ms. Melissa McIlhaney, IRB Program Coordinator, Office of Research Compliance, (979)458-4067, mcilhaney@tamu.edu.

Once again, thank you very much for your cooperation and support.

Sincerely,

_____ _____
Noe Ramos Jr. Date

Doctoral Candidate - School Psychology Program
Texas A&M University
College of Education - Department of Educational Psychology
704 Harrington Tower – MS#4225
College Station, TX 77843
E-mail: noeramos@tamu.edu

*Please sign one

_____ _____
I **agree** to participate in this study I **DO NOT agree** to participate in this study
(Signature)

*Please print name and date

_____ _____
(Print) (Date)

APPENDIX B

DEMOGRAPHIC QUESTIONNAIRE

1) Name _____

2) Role (circle)

Paraprofessional Teacher Administrator

3) What grade(s) do you teach? (circle all that apply)

Pre-K K 1 2 3 4 5 6

4) What subject(s) do you currently teach? (Please check all that apply)

_____ English
_____ Math
_____ Reading
_____ Special Education
_____ Science
_____ Other (please specify) _____
_____ Social Studies/History
_____ Art
_____ Physical Education
_____ English as a Second Language
_____ Bilingual Education

5) How many years of teaching experience do you have? (circle)

a) 0-5 years b) 6-10years c) 11-15years d) 16-20 years

e) 21-25 years f) 26-30 years g) 31-35 years h) 36-40 years

i) 48+ years

6) What is your age? _____

7) Gender

_____ Male _____Female

8) Ethnicity

_____ Hispanic/Latino
_____ Caucasian/White
_____ Native American/Indian
_____ African American/Black
_____ Asian/Pacific Islander
_____ Other (please specify)

9) Level of Education

_____ 4-year college degree
_____ some school beyond college
_____ professional or graduate degree

10) What type of certification do you have? (check all that apply)

_____ Alternative Certification Program
_____ Bilingual
_____ Early Childhood
_____ Middle School
_____ Special Education
_____ None
_____ Other (please specify_____)

11) How were you certified? (circle)

Traditional (College) Alternative Program

12) Do you speak any languages other than English? (circle) Yes No

If circled yes, how would you rate your proficiency? (please circle a number on a scale from 1 to 10. A rating of 1 meaning you only know a couple of words, a rating of 5 meaning you can get by with basic interpersonal communication skills, and a rating of 10 meaning that you can speak, read, and write with ease)

1 2 3 4 5 6 7 8 9 10

APPENDIX C

*Please respond to the following five questions by circling the number which represents your IDEIAs and/or beliefs. Please do not leave any blank and make one choice only for each question.

1) How comfortable do you feel regarding your own knowledgeable of ADHD?

1= Very Uncomfortable

2= Uncomfortable

3= Somewhat Uncomfortable

4= Somewhat Comfortable

5= Comfortable

6= Very Comfortable

2) How comfortable are you when teaching a student who has ADHD?

1= Very Uncomfortable

2= Uncomfortable

3= Somewhat Uncomfortable

4= Somewhat Comfortable

5= Comfortable

6= Very Comfortable

3) How comfortable are you in developing interventions that assist students who have ADHD?

1= Very Uncomfortable

2= Uncomfortable

3= Somewhat Uncomfortable

4= Somewhat Comfortable

5= Comfortable

6= Very Comfortable

4) How effective do you perceive your instruction to be when working with students with ADHD?

1 = extremely ineffective

2= ineffective

3= fairly ineffective

4= fairly effective

5= effective

6= extremely effective

5) How comfortable are you in your ability to detecting a student suspected of having ADHD?

1= Very Uncomfortable

2= Uncomfortable

3= Somewhat Uncomfortable

4= Somewhat Comfortable

5= Comfortable

6= Very Comfortable

APPENDIX D

*Items on the Knowledge of Attention Deficit Disorders Scales (KADDS)

Please read the following statements and circle True, if you believe the statement to be true, circle False if you believe the statement to be false, and circle Don't Know if you do not know the answer to a specific statement.

1. Most estimates suggest that ADHD occurs in approximately 15% of school age children.

   True False Don't Know

2. Current research suggests that ADHD is largely the result of ineffective parenting skills.

   True False Don't Know

3. Children with ADHD are frequently distracted by extraneous stimuli.

   True False Don't Know

4. Children with ADHD are typically more compliant with their fathers than with their mothers.

   True False Don't Know

5. In order to be diagnosed with ADHD, the child's symptoms must have been present before age seven.

   True False Don't Know

6. ADHD is more common in the 1st degree biological relatives (i.e. mother, father) of children with ADHD than in the general population.

True False Don't Know

7. One symptom of children with ADHD is that they have been physically cruel to other people.

True False Don't Know

8. Antidepressant drugs have been effective in reducing symptoms for many children with ADHD.

True False Don't Know

9. Children with ADHD often fidget or squirm in their seats.

True False Don't Know

10. Parent and teacher training in managing a child with ADHD are generally effective when combined with medication treatment.

True False Don't Know

11. It is common for children with ADHD to have an inflated sense of self-esteem or grandiosity.

True False Don't Know

12. When treatment of a child with ADHD is terminated, it is rare for the child's symptoms to return.

True False Don't Know

13. It is possible for an adult to be diagnosed with ADHD.

True False Don't Know

14. Children with ADHD often have a history of stealing or destroying other people's things.

True False Don't Know

15. Side effects of stimulant drugs used for treatment of ADHD may include mild insomnia and appetite reduction.

True False Don't Know

16. Current wisdom about ADHD suggests two clusters of symptoms: One of inattention and another consisting of hyperactivity/impulsivity.

True False Don't Know

17. Symptoms of depression are found more frequently in children with ADHD than in children without ADHD.

True False Don't Know

18. Individual psychotherapy is usually sufficient for the treatment of most children with ADHD.

True False Don't Know

19. Most children with ADHD "outgrow" their symptoms by the onset of puberty and subsequently function normally in adulthood.

True False Don't Know

20. In severe cases of ADHD, medication is often used before other behavior modification techniques are attempted.

True False Don't Know

21. In order to be diagnosed as ADHD, a child must exhibit relevant symptoms in two or more settings (e.g., home, school).

True False Don't Know

22. If a child with ADHD is able to demonstrate sustained attention to video games or TV for over an hour, that child is also able to sustain attention for at least an hour of class or homework.

True False Don't Know

23. Reducing dietary intake of sugar or food additives is generally effective in reducing the symptoms of ADHD.

True False Don't Know

24. A diagnosis of ADHD by itself makes a child eligible for placement in special education.

True False Don't Know

25. Stimulant drugs are the most common type of drug used to treat children with ADHD

True False Don't Know

26. Children with ADHD often have difficulties organizing tasks and activities.

True False Don't Know

27. Children with ADHD generally experience more problems in novel situations than in familiar situations.

True False Don't Know

28. There are specific physical features which can be identified by medical doctors (e.g., pediatrician) in making a definitive diagnosis of ADHD.

True False Don't Know

29. In school age children, the prevalence of ADHD in males and females is equivalent.

True False Don't Know

30. In very young children (less than 4 years old), the problem behaviors of ADHD children (e.g. hyperactivity, inattention) are distinctly different from age appropriate behaviors of children without ADHD.

True False Don't Know

31. Children with ADHD are more distinguishable from children without ADHD in a classroom setting than in a free play situation.

True False Don't Know

32. The majority of children with ADHD evidence some degree of poor school performance in the elementary school years.

True False Don't Know

33. Symptoms of ADHD are often seen in children without ADHD who come from inadequate and chaotic home environments.

True False Don't Know

34. Behavioral/Psychological interventions for children with ADHD focus primarily on the child's problems with inattention.

True False Don't Know

35. Electroconvulsive Therapy (i.e. shock treatment) has been found to be an effective treatment for severe cases of ADHD.

True False Don't Know

36. Treatments for ADHD which focus primarily on punishment have been found to be the most effective in reducing the symptoms of ADHD.

True False Don't Know

APPENDIX E

Vignette 1 (Set 1)
Jorge Santa María

Since the beginning of the school year, Jorge Santa María's teacher has noted he has had difficulty remaining focused on tasks. However, Jorge's academic performance indicates that he is capable of doing the work. Jorge is a Hispanic male in a third grade classroom of approximately 23 students. Desks are arranged in small groupings in which there are four to five children at each table. Jorge is seated at a table with four other children. You are observing Jorge Santa María. The class is working on reading comprehension in order to prepare for the TAKS test. Jorge is observed with the following behaviors: tapping his pencil during quiet times, leaning back in his chair, socializing during the lesson, and appearing to be off-task. The teacher notes this is typical behavior for Jorge. Nevertheless, despite the fact that Jorge has these behaviors, he is still able to correctly respond to the teacher's questions when called upon. Jorge has difficulty initiating tasks after receiving instruction from the teacher. Even after working with the teacher on a one-to-one basis, Jorge attempts assigned tasks but often fails to complete them. His work varies from good to poor. When Jorge fails to follow through with his assignments, he is usually verbally reprimanded, and at times, is sent to time out.

Given the information, if you were Jorge Santa María's teacher, would you initiate a Special Education referral?

(Please circle) YES NO

If yes, which of the following outcomes would be the most helpful to Jorge Santa María?

(Please choose one)
____ Evaluation for a possible learning disability
____ Evaluation of a possible emotional disorder or behavioral disorder
____ Counseling or Therapy with school counselor

Which of the following techniques would you use in dealing with Jorge Santa María? (Please check all that apply)

____ Behavioral Contract
____ Positive Reinforcement
____ Referral to Principal
____ Time Out
____ Contact Parent
____ Modifications (e.g. seating, shorter assignments, extended time, etc.)
____ Student-Teacher Conference
____ Loss of Privileges (e.g. recess, class leader, computer time, etc.)
____ Detention/In School Suspension (ISS)
____ Other: _____

If the above techniques that you have chose were followed, what do you think would be the most likely outcome for Jorge Santa María over the next several years?

(Please choose one)
____ He would stay the same
____ He would get worse
____ He would improve

Would you suspect that Jorge Santa María is a child that has ADHD?

(Please circle) YES NO

Vignette 1 (Set 2)
Logan Taylor Smith

Since the beginning of the school year, Logan Taylor Smith's teacher has noted he has difficulty remaining focused on tasks. However, Logan Taylor's academic performance indicates that he is capable of doing the work. Logan Taylor is a Caucasian male in a third grade classroom of approximately 23 students. Desks are arranged in small groupings in which there are four to five children at each table. Logan Taylor is seated at a table with four other children. You are observing Logan Taylor Smith. The class is working on reading comprehension in order to prepare for the TAKS test. Logan Taylor is observed with the following behaviors: tapping his pencil during quiet times, leaning back in his chair, socializing during the lesson, and appearing to be off-task. The teacher notes this is typical behavior for Logan Taylor. Nevertheless, despite the fact that Logan Taylor has these behaviors, he is still able to correctly respond to the teacher's questions when called upon. Logan Taylor has difficulty initiating tasks after receiving instruction from the teacher. Even after working with the teacher on a one-to-one basis, Logan Taylor attempts assigned tasks but often fails to complete them. His work varies from good to poor. When Logan Taylor fails to follow through with his assignments, he is usually verbally reprimanded, and at times, is sent to time out.

Given the information, if you were Logan Taylor Smith's teacher, would you initiate a Special Education referral?

(Please circle) YES NO

If yes, which of the following outcomes would be the most helpful to Logan Taylor Smith?
(Please choose one)

____ Evaluation for a possible learning disability
____ Evaluation of a possible emotional disorder or behavioral disorder
____ Counseling or Therapy with school counselor

Which of the following techniques would you use in dealing with Logan Taylor Smith?
(Please check all that apply)

____ Behavioral Contract
____ Positive Reinforcement
____ Referral to Principal
____ Time Out
____ Contact Parent
____ Modifications (e.g. seating, shorter assignments, extended time, etc.)
____ Student-Teacher Conference
____ Loss of Privileges (e.g. recess, class leader, computer time, etc.)
____ Detention/In School Suspension (ISS)
____ Other: _____

If the above techniques that you checked were followed, what do you think would be the most likely outcome for Logan Taylor Smith over the next several years?

(Please choose one)
____ He would stay the same
____ He would get worse
____ He would improve

Would you suspect that Logan Taylor Smith is a child that has ADHD?

(Please circle) YES NO

Vignette 2 (Set 1)
Román García de Alba

Román García de Alba is a Hispanic male in a third grade classroom with approximately 23 students. The class is working on reading comprehension in order to prepare for the TAKS test. Desks are arranged in small groupings in which there are four to five children at each table. You are observing Román as he is seated at a table with four other children. Román is observed with the following behaviors: tapping his pencil during quiet times, leaning back in his chair, socializing during the lesson, and appearing to be off-task. Román has difficulty initiating tasks after receiving instruction from the teacher. However, Román's academic performance indicates that he is capable of doing the work. The teacher notes this is typical behavior for Román. Nevertheless, despite the fact that Román has these behaviors, he is still able to correctly respond to the teacher's questions when called upon. Even after working with the teacher on a one-to-one basis, Román attempts assigned tasks but often fails to complete them. His work varies from good to poor. When Román fails to follow through with his assignments, he is usually verbally reprimanded, and at times, is sent to time out. Since the beginning of the school year, Román García de Alba's teacher has noted he has difficulty remaining focused on tasks.

Given the information, if you were Román García de Alba's teacher, would you initiate a Special Education referral?

(Please circle) YES NO

If yes, which of the following outcomes would be the most helpful to Román García de Alba?
(Please choose one)

____ Evaluation for a possible learning disability
____ Evaluation of a possible emotional disorder or behavioral disorder
____ Counseling or Therapy with school counselor

Which of the following techniques would you use in dealing with Román García de Alba? (Please check all that apply)

____ Behavioral Contract
____ Positive Reinforcement
____ Referral to Principal
____ Time Out
____ Contact Parent
____ Modifications (e.g. seating, shorter assignments, extended time, etc.)
____ Student-Teacher Conference
____ Loss of Privileges (e.g. recess, class leader, computer time, etc.)
____ Detention/In School Suspension (ISS)
____ Other: _____

If the above techniques that you checked were followed, what do you think would be the most likely outcome for Román García de Alba over the next several years?

(Please choose one)
____ He would stay the same
____ He would get worse
____ He would improve

Would you suspect that Román García de Alba is a child that has ADHD?

(Please circle) YES NO

Vignette 2 (Modified - Set 2)
Christopher Jacob Collins

Christopher Jacob Collins is a Caucasian male in a third grade classroom with approximately 23 students. The class is working on reading comprehension in order to prepare for the TAKS test. Desks are arranged in small groupings in which there are four to five children at each table. You are observing Christopher Jacob as he is seated at a table with four other children. Christopher Jacob is observed with the following behaviors: tapping his pencil during quiet times, leaning back in his chair, socializing during the lesson, and appearing to be off-task. Christopher Jacob has difficulty initiating tasks after receiving instruction from the teacher. However, Christopher Jacob's academic performance indicates that he is capable of doing the work. The teacher notes this is typical behavior for Christopher Jacob. Nevertheless, despite the fact that Christopher Jacob has these behaviors, he is still able to correctly respond to the teacher's questions when called upon. Even after working with the teacher on a one-to-one basis, Christopher Jacob attempts assigned tasks but often fails to complete them. His work varies from good to poor. When Christopher Jacob fails to follow through with his assignments, he is usually verbally reprimanded, and at times, is sent to time out. Since the beginning of the school year, Christopher Jacob Collins's teacher has noted he has difficulty remaining focused on tasks.

Given the information, if you were Christopher Jacob Collins's teacher, would you initiate a Special Education referral?

(Please circle) YES NO

If yes, which of the following outcomes would be the most helpful to Christopher Jacob Collins? (Please choose one)

____ Evaluation for a possible learning disability
____ Evaluation of a possible emotional disorder or behavioral disorder
____ Counseling or Therapy with school counselor

Which of the following techniques would you use in dealing with Christopher Jacob Collins? (Please check all that apply)

____ Behavioral Contract
____ Positive Reinforcement
____ Referral to Principal
____ Time Out
____ Contact Parent
____ Modifications (e.g. seating, shorter assignments, extended time, etc.)
____ Student-Teacher Conference
____ Loss of Privileges (e.g. recess, class leader, computer time, etc.)
____ Detention/In School Suspension (ISS)
____ Other: _____

If the above techniques that you checked were followed, what do you think would be the most likely outcome for Christopher Jacob Collins over the next several years?

(Please choose one)
____ He would stay the same
____ He would get worse
____ He would improve

Would you suspect that Christopher Jacob Collins is a child that has ADHD?

(Please circle) YES NO

Vignette 3 (Set 1)
Héctor Rolando Leal

You are observing Héctor Rolando Leal while the class is working on reading comprehension in order to prepare for the TAKS test. Héctor Rolando is a Hispanic male in a third grade classroom of approximately 23 students. Desks are arranged in small groupings in which Héctor Rolando is seated with four other children. When Héctor Rolando fails to follow through with his assignments, he is usually verbally reprimanded, and at times, is sent to time out. His work varies from good to poor. However, Héctor Rolando's academic performance indicates that he is capable of doing the work. Héctor Rolando is observed with the following behaviors: tapping his pencil during quiet times, leaning back in his chair, socializing during the lesson, and appearing to be off-task. The teacher notes this is typical behavior for Héctor Rolando. Nevertheless, despite the fact that Héctor Rolando has these behaviors, he is still able to correctly respond to the teacher's questions when called upon. Héctor Rolando has difficulty initiating tasks after receiving instruction from the teacher. Since the beginning of the school year, Héctor Rolando Leal's teacher has noted he has difficulty remaining focused on tasks. Even after working with the teacher on a one-to-one basis, Héctor Rolando attempts assigned tasks but often fails to complete them.

Given the information, if you were Héctor Rolando Leal's teacher, would you initiate a Special Education referral?

(Please circle) YES NO

If yes, which of the following outcomes would be the most helpful to Héctor Rolando Leal? (Please choose one)

____ Evaluation for a possible learning disability
____ Evaluation of a possible emotional disorder or behavioral disorder
____ Counseling or Therapy with school counselor

Which of the following techniques would you use in dealing with Héctor Rolando Leal? (Please check all that apply)

____ Behavioral Contract
____ Positive Reinforcement
____ Referral to Principal
____ Time Out
____ Contact Parent
____ Modifications (e.g. seating, shorter assignments, extended time, etc.)
____ Student-Teacher Conference
____ Loss of Privileges (e.g. recess, class leader, computer time, etc.)
____ Detention/In School Suspension (ISS)
____ Other: _____

If the above techniques that you checked were followed, what do you think would be the most likely outcome for Héctor Rolando Leal over the next several years?

(Please choose one)
____ He would stay the same
____ He would get worse
____ He would improve

Would you suspect that Héctor Rolando Leal is a child that has ADHD?

(Please circle) YES NO

Vignette 3 (Set 2)
Ethan Brandon McGuire

You are observing Ethan Brandon McGuire while the class is working on reading comprehension in order to prepare for the TAKS test. Ethan Brandon is a Caucasian male in a third grade classroom of approximately 23 students. Desks are arranged in small groupings in which Ethan Brandon is seated with four other children. When Ethan Brandon fails to follow through with his assignments, he is usually verbally reprimanded, and at times, is sent to time out. His work varies from good to poor. However, Ethan Brandon's academic performance indicates that he is capable of doing the work. Ethan Brandon is observed with the following behaviors: tapping his pencil during quiet times, leaning back in his chair, socializing during the lesson, and appearing to be off-task. The teacher notes this is typical behavior for Ethan Brandon. Nevertheless, despite the fact that Ethan Brandon has these behaviors, he is still able to correctly respond to the teacher's questions when called upon. Ethan Brandon has difficulty initiating tasks after receiving instruction from the teacher. Since the beginning of the school year, Ethan Brandon McGuire's teacher has noted he has difficulty remaining focused on tasks. Even after working with the teacher on a one-to-one basis, Ethan Brandon attempts assigned tasks but often fails to complete them.

Given the information, if you were Ethan Brandon McGuire's teacher, would you initiate a Special Education referral?

(Please circle) YES NO

If yes, which of the following outcomes would be the most helpful to Ethan Brandon McGuire? (Please choose one)

____ Evaluation for a possible learning disability
____ Evaluation of a possible emotional disorder or behavioral disorder
____ Counseling or Therapy with school counselor

Which of the following techniques would you use in dealing with Ethan Brandon McGuire? (Please check all that apply)

____ Behavioral Contract
____ Positive Reinforcement
____ Referral to Principal
____ Time Out
____ Contact Parent
____ Modifications (e.g. seating, shorter assignments, extended time, etc.)
____ Student-Teacher Conference
____ Loss of Privileges (e.g. recess, class leader, computer time, etc.)
____ Detention/In School Suspension (ISS)
____ Other: _____

If the above techniques that you checked were followed, what do you think would be the most likely outcome for Ethan Brandon McGuire over the next several years?

(Please choose one)
____ He would stay the same
____ He would get worse
____ He would improve

Would you suspect that Ethan Brandon McGuire is a child that has ADHD?

(Please circle) YES NO

APPENDIX F

THANK YOU LETTER

Dear Teacher,

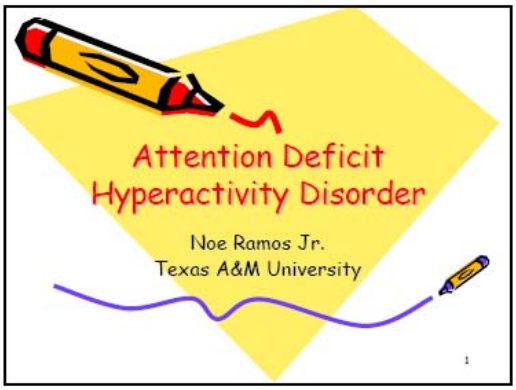
Thank you for participation in my study dealing with Hispanic teachers' perceptions of children with ADHD. Your contribution to our investigation will provide new insight into how school psychologists can influence school systems by collaborating with teachers in developing effective interventions, but most importantly, safeguarding the future of children who suffer from this disorder. From these findings, I am also hoping to influence school administrators, school counselors, and school psychologists to recognize the importance of disseminating information dealing with the diagnosis, treatment, and other useful information associated with teaching children with ADHD. I have enjoyed working with you over the last few weeks and hope that your participation has been a positive experience. I sincerely appreciate your commitment to this study. If you would like to receive the results of this study or have any questions, please feel free to call me at (956) 239-1306.

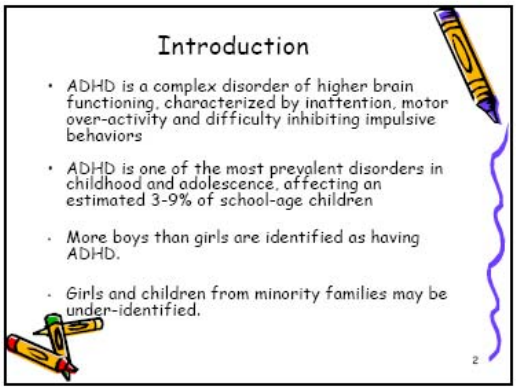
Sincerely,

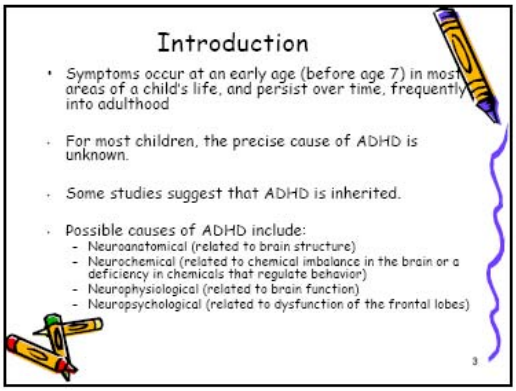
Noe Ramos Jr.
Doctoral Candidate
School Psychology Program
Department of Educational Psychology
Texas A&M University

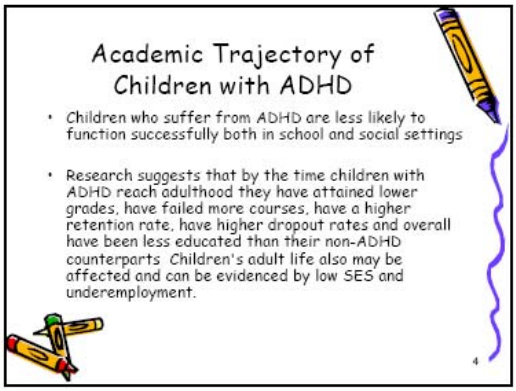
APPENDIX G

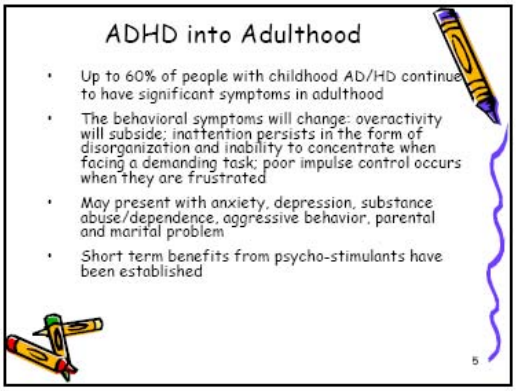
*For additional information regarding Appendix G and H – please contact author

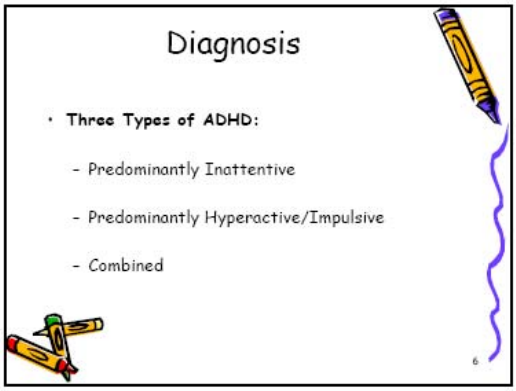












Diagnosis

Predominantly Inattentive:

1. Makes careless mistakes
2. Difficulty sustaining attention
3. Does not seem to listen
4. Does not follow through instructions, fails to finish work
5. Difficulty organizing tasks and activities
6. Reluctant to engage in tasks which require sustained mental activity
7. Loses equipment necessary for activity
8. Distracted by extraneous stimuli
9. Forgetful in daily activities

7

Diagnosis

Predominantly Hyperactive/Impulsive:

- Fidgets with hands or feet or squirms in seat
- Leaves seat in classroom or in other situations where remaining seated is expected
- Runs about excessively in situations in which it is inappropriate
- Difficulty in playing quietly
- Often 'on the go' as if driven by a motor
- Talks excessively
- Blurts out answers before questions have been completed.
- Has difficulty waiting turn.

1. Interrupts or intrudes on others e.g. pushes into conversations or games.

8

Diagnosis

- Combined type:
  - Has characteristics of both the Inattentive and Hyperactive/Impulsive types

9

Assessment

- Observations
- Interviews with child, parents, and teachers
- Review of intellectual and academic assessments
- Rating scales completed by teachers, parents, and student
- Medical examination

10

ADHD and the Law

- Children with ADHD may be protected by three federal statutes:
  - Section 504 of the Rehabilitation Act of 1973 (Section 504)
  - The Americans with Disabilities Act of 1990 (ADA)
  - The reauthorization of the Individuals with Disabilities Education Act, Part B (IDEA) (2004)

11

Section 504

- No otherwise qualified individual with a disability in the United States, as defined in section 705(20) of this title, shall, solely by reason of her or his disability, be excluded from the participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance or under any program or activity conducted by any Executive agency or by the United States Postal Service.
- Section 504 requires identification, evaluation, provision of appropriate services, notification of parents, an individualized accommodation plan, and procedural safeguards.
- These activities must be performed in accordance with Section 504 regulations.
- Many students with ADHD qualify as a person with a disability.

12

Section 504

- General educators may need to write Section 504 plans for students with ADHD.
- A Section 504 plan serves as legal documentation detailing agreed-upon services.
- Recommendations for writing a 504 plan:
  - Plan should be developed by a team.
  - Areas identified as causing significant limitations should be addressed in the plan.
  - Plan should include how school personnel will administer and monitor medication.

13

American with Disabilities Act (ADA)

- The ADA is a wide-ranging civil rights law that prohibits discrimination based on disability.
- It affords similar protections against discrimination to Americans with disabilities as the Civil Rights Act of 1964, which made discrimination based on race, religion, sex, national origin, and other characteristics illegal.
- Disability is defined "a physical or mental impairment that substantially limits a major life activity."

14

IDEA (2004)

- A student with ADHD could be eligible to receive special education services as defined by Part B of the Individuals with Disabilities Education Act under the Other Health Impairment (OHI) category if the ADHD is adversely affecting the child's educational performance.
- A diagnosis of ADHD by a physician is not enough to make a child eligible for services; educational need must also be present.
- For children receiving special education services, integrate appropriate practices within an Individualized Education Program (IEP).

15

Cultural and Linguistic Diversity

- When ADHD coexists with CLD, it presents unique challenges for the teacher.
  - Teachers must become familiar with students' unique values, views, customs, interests, and behaviors.
- Service-eligible behaviors cannot be the result of CLD differences.
- Chaotic home environments may exacerbate ADHD-related behaviors.

16

Medical Treatment

- Many students with ADHD are prescribed medications by physicians.
- Teachers need to understand:
  - **the types of medications used;**
  - **commonly-prescribed medication dosages;**
  - **the intended effects of medication; and**
  - **potential side effects of medication.**

17

Medical Treatment

- Psychostimulants are the most commonly-prescribed medication for children with ADHD.
- Common Psychostimulants
  - **Dexedrine (dextroamphetamine)**
  - **Ritalin (methylphenidate)**
  - **Adderall (amphetamine salts)**

18

Medical Treatment

- Prescribed less often than psychostimulants
- Generally used when stimulants are ineffective OR when the individual is also depressed
- Long-term use of antidepressants has not been studied extensively
- Types of antidepressants commonly used to treat ADHD:
  - Tofranil (imipramine)
  - Nopramin (desipramine)
  - Elavil (amytriptyline)

19

Behavioral Effects of Stimulants

- Increased Attention and Concentration
- Decreased Impulsivity
- Decreased Task-Irrelevant Activity Level
- Decreased Aggressiveness
- Increased Compliance
- Improved Handwriting and Fine Motor Skill
- Improved Peer Relations and Social Status
- Possible enhancement of academic productivity

20

Side Effects of Stimulants

- Insomnia & Decreased Appetite (50-60%)
- Headaches and Stomachaches (20-40%)
- Prone to Crying (10%)
- Nervous Mannerisms (10%)
- Tics (<5%) and Tourette's (Very Rare)
- Overfocused behavior; Cognitive toxicity
- Mild Weight Loss (A Few Pounds First 1-2 Years); No effect on Skeletal Growth
- Mild Increases in Heart Rate and Blood Pressure
- Cylert Affects Liver Functioning; Needs Monitor

21

Behavioral Treatment

- Positive Reinforcement
  - Entice the student to comply with your requests in exchange for small treats, such as trading cards or stickers, or privileges, such as being allowed to play on the computer.
  - The eventual goal is to get the student to behave without the promise of a reward and to maintain the behavior so that it becomes routine.
  - This technique works best with younger children who need to see immediate consequences.
  - Be careful not to promise the student too large a prize; luring your child with big-ticket items shifts the focus off the behavior and onto getting the goods.

22

Behavioral Treatment

- Reward systems
  - For an older student who's more capable of understanding longer-term goals, you can set up a reward chart where he accumulates points for good behavior that add up to a bigger payoff after a certain time.
  - Place the chart where the student can see it easily such as in the classroom or near his desk.
  - Use stickers or colored markers to check off when goals are completed and let the student know that for every five gold stars, he gets a prize, like extra time on the computer, etc.

23

Behavioral Treatment

- Withholding privileges
  - This technique, also known as "response cost," involves taking away privileges when the student is misbehaving.
  - Withholding has to be used carefully to be effective without damaging the student's self-esteem.
  - You may want to reserve this technique for one particularly troublesome area or dangerous behavior, such as hitting another student or running in the halls.
  - You also shouldn't withhold activities that are instrumental in managing the student's ADHD: "For example, you don't want to deprive a hyper kid of running around outside if burning off extra energy helps him stay calm."

24

Behavioral Treatment

- Token economy
  - Token economy is a more complicated reward system in which the student earns points (or tokens) when he behaves and loses them when he misbehaves.
  - For example, he may accumulate stars on a chart for accomplishments such as completing his homework and lose stars for breaking rules such as leaving the table during dinner.
  - At the end of the week, he may receive a prize depending on the number of stars he has left.

25

Possible Functions of ADHD Behavior

- Avoid/escape effortful tasks
- Obtain peer attention
- Obtain teacher attention
- Obtain tangible object
- Sensory stimulation

26

Behavioral Intervention

- Avoid/escape effortful tasks
  - Increase stimulation value of task and/or provide brief "attention breaks"
- Obtain peer attention
  - Provide peer attention following appropriate behavior (e.g., peer tutoring)
- Obtain teacher attention
  - Provide attention following appropriate behavior while ignoring inappropriate behavior (or time out from positive reinforcement)

27

Curriculum Modifications

- Students with ADHD need a curriculum adapted to "focusing on doing" and one that avoids long periods of sitting and listening.
- Examples:
  - Experience-Based Learning
  - Problem-Based Learning
  - Varied Assessment Techniques

28

Testing Accommodations

- Extra time
- Frequent breaks
- Taking Exams in a distraction-reduced environment

29

Classroom interventions

- Teachers should make it clear to students what behavior is unacceptable (what we don't want them to do) and what behavior is acceptable (what we want them to do).
- These behaviors should be carefully defined so that the teacher will be able to accurately monitor them.
- It is also important to ensure that a behavior intervention plan is in place and based upon a careful functional assessment of behavior.

30

Classroom interventions

- Antecedents and consequences of both the problem and replacement behaviors need to be studied. Antecedents will suggest environmental changes that set up the student for success or failure.
- Analysis of consequences, on the other hand, will identify those environmental contingencies that serve to reinforce both desired and undesired behavior.
- The function of the problem behavior should guide intervention plans.

31

Task duration

- To accommodate to the student's short attention span, academic assignments should be brief and feedback regarding accuracy immediate.
- Longer projects should be broken up into manageable parts.
- Short time limits for task completion should be specified and can be enforced with timers.

32

Direct instruction

- Attention to task is improved when the student with ADHD is engaged in teacher-directed as opposed to independent seat-work activities.
- Also, the teaching of note-taking strategies increases the benefits of direct instruction. Both comprehension and on-task behavior improve with the development of these skills.

33

Peer tutoring

- Class-wide peer tutoring provides many of the instructional variables known to be important in setting up students with ADHD for success.
- It provides frequent and immediate feedback.
- When combined with a token economy, peer tutoring has been found to yield dramatic academic gains.

34

Scheduling

- Based on evidence that the on-task behavior of students with ADHD progressively worsens over the course of the day
- It is suggested that academic instruction be provided in the morning.
- During the after-noon, when problem solving skills are especially poor, more active, nonacademic activities should be scheduled.

35

Novelty

- Presentation of novel, interesting, highly motivating material will improve attention.
- Increasing the novelty and interest level of tasks through use of increased stimulation (e.g., color, shape, texture) reduces activity level, enhances attention and improves overall performance.

36

Structure and Organization

- Lessons should be carefully structured and important points clearly identified.
- Providing a lecture outline is a helpful note-taking aid that increases memory of main ideas.
- Students with ADHD perform better on memory tasks when material is meaningfully structured for them.

37

Organizational Tactics

- **Students with ADHD often have difficulty organizing their work and developing effective study skills.**
- **Organizational strategies include:**
  - **Designating space for materials**
  - **Establishing a routine for writing down assignments (e.g., assignment notebook)**
  - **Providing notebooks in different colors for each subject area.**

38

Rule reminders and visual cues

- The rules given to students with ADHD must be well defined, specific and frequently reinforced through visible modes of presentation.

39

Pacing of Work

- When possible, it is helpful to allow students with ADHD to set their own pace for task completion.
- The intensity of problematic ADHD behaviors is less when work is self paced, as compared to situations where work is paced by others.

40

Instructions

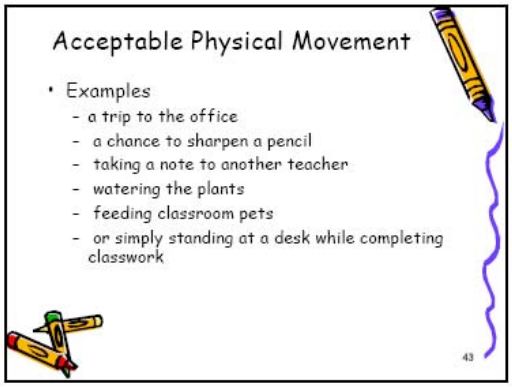
- Because students with ADHD have difficulty following multi-step direction, directions should be:
  - Short
  - Specific
  - Direct
- Students should be asked to rephrase directions in their own words
- Teachers must be prepared
  - to repeat directions frequently,
  - recognize that students often may not have paid attention to what was said.

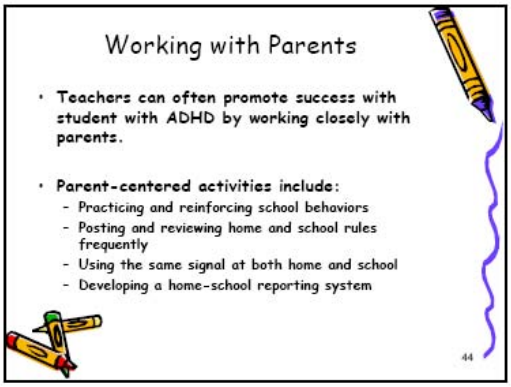
41

Acceptable Physical Movement

- The student with ADHD may have difficulty sitting still.
- Thus, productive physical movement should be planned.
- It is appropriate to allow the student with ADHD opportunities for controlled movement and to develop a repertoire of physical activities for the entire class such as stretch breaks.

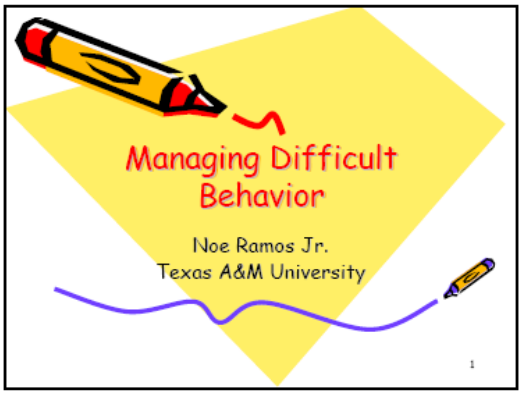
42

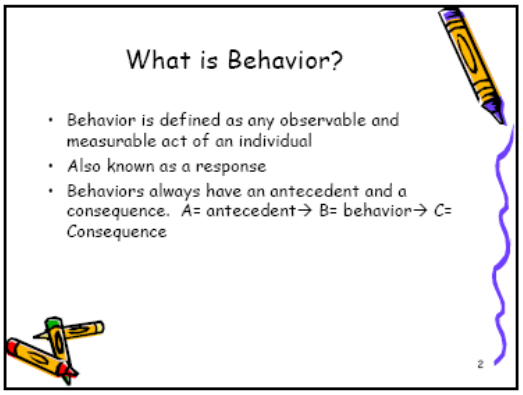

Acceptable Physical Movement
• Examples
– a trip to the office
– a chance to sharpen a pencil
– taking a note to another teacher
– watering the plants
– feeding classroom pets
– or simply standing at a desk while completing classwork
43

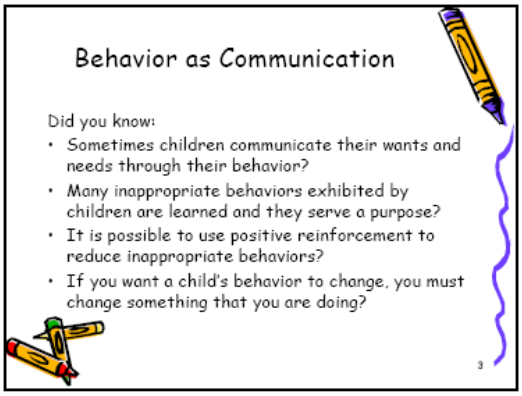

Working with Parents
• Teachers can often promote success with student with ADHD by working closely with parents.
• Parent-centered activities include:
– Practicing and reinforcing school behaviors
– Posting and reviewing home and school rules frequently
– Using the same signal at both home and school
– Developing a home-school reporting system
44

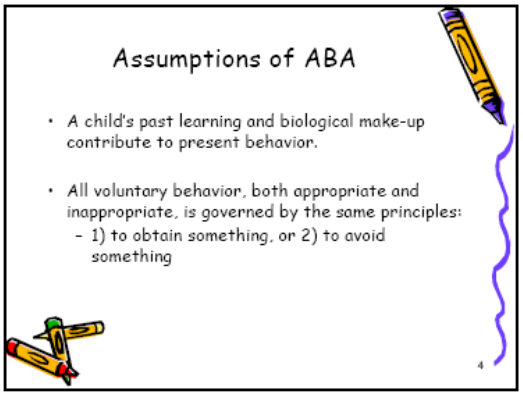
APPENDIX H

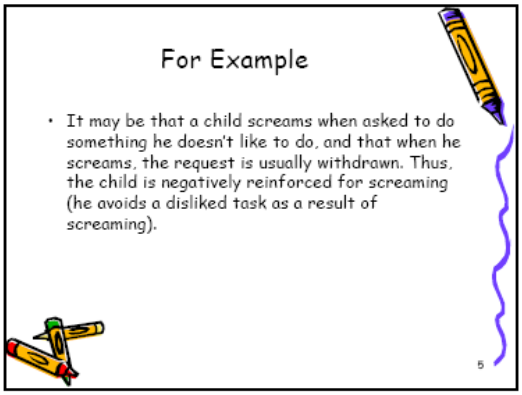
*For additional information regarding Appendix G and H – please contact author

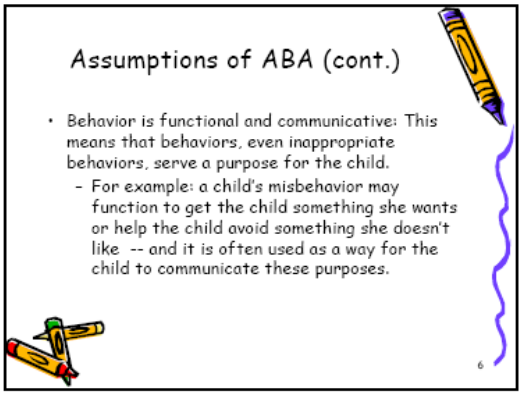












Assumptions of ABA (cont.)

- Behavior is contextual. It is related to the environment in which it occurs. Attempts to change a behavior without first identifying contextual elements may be contributing to the problem behavior and are nonproductive
  - For example: How are you providing instruction? Are their noises or distractions present? (external factors)
  - Is the child hungry? Sleepy? Bored? Excited? (internal factors)

7

What is ABA?

- Study of human behavior
- Studies patterns in an individual's behavior as a way of understanding and predicting future behavior.
- Studies how to change human behavior

8

How do we change Behavior?

- Reinforcement
- Punishment
- Extinction

9

What is Reinforcement?

- Increases behavior
- Most important term in Applied Behavior Analysis
- Key to learning
- Everything you have ever learned is a result of reinforcement

10

Example #1 (Reinforcement)

- A- In the grocery store, a child asks his mom for a quarter for the gumball machine (behavior) and his mom gives him a quarter (reinforcer).
- B- next week
- C- while at the grocery store
- D- the child asks his mom for a quarter for the gumball machine. (behavior)

11

Example #2 (Reinforcement)

- A- Upon entering the grocery store, a child tantrums because he wants to leave (behavior) and his father takes him home (reinforcer).
- B- next week
- C- when father and son enter the grocery store and the son wants to leave
- D- the child tantrums (behavior)

12

Anything Can Be A Reinforcer!!!!!

- Anything can be a reinforcer as long as it increases behavior.
- Examples: olives, vacuuming, stickers, coffee, liver and onions, broccoli, brussel sprouts, country music, heavy metal, ballet, football, money…

13

Reinforcers

- Are either unconditioned or conditioned
- Unconditioned Reinforcers (also known as primary reinforcers) are those reinforcers that were present at birth and meet our basic needs (ex. Food, drink, temperature, sleep, etc)
- Conditioned Reinforcers (also known as secondary reinforcers) are those that have been paired with unconditioned reinforcers and they themselves have become reinforcing (Ex. Stickers, smiles, high fives, tickles, money, computer time etc.)

14

Two Types of Reinforcement

- Positive Reinforcement
- Negative Reinforcement
- BOTH increase Behavior

15

Positive and Negative

- Positive does not equal "good"
- Negative does not equal "bad"
- Positive means adding a stimulus
- Negative means removing a stimulus
- And, both increase behavior

16

Positive and Negative Reinforcement Defined

- ***Positive Reinforcement***- A behavior is followed by the presentation of a stimulus and as a result, occurs more often in the future.
- ***Negative Reinforcement***- A behavior is followed by the withdrawal or termination of a stimulus and, as a result, occurs more often in the future.

17

Punishment Defined

- A- an event immediately follows a response,
- B- and in the future
- C- under similar conditions
- D- the likelihood of that response is decreased

18

Example #1 (Punishment)

- A- While in backseat of car and teasing each other, brother pulls sisters ponytail (behavior). sister bites brothers arm (punisher).
- B- next day
- C- while children are in backseat of car
- D- brother teases sister but does not pull ponytail.

19

Example #2 (Punishment)

- A- While playing football on the playground, one child tackles another (behavior) and teacher takes football away (punisher).
- B- next day
- C- while on playground
- D- Children play touch football when teacher is watching and don't tackle each other

20

Everyone Reinforces and Punishes Behavior!!!

- Mike goes to his boss and says "I finished the Boston Project." His boss responds, "Excellent! Now you can help Tim on the New York project."
- Mike goes to his boss and says "I finished the Boston Project." Boss responds, "Excellent, why don't you take the rest of the day off."

21

Reinforcement and Punishment (cont)

- Parent is on the telephone. Child colors on wall. Parent gets off phone and reprimands child.
- Teenage daughter and father are in a car lot. Daughter insists she has to have the newest model and fully loaded car. Father insists his precious angel is right and buys the car.

22

Reinforcement and Punishment (cont)

- Teacher presents student with task. Student screams and teacher says "you need to take a break."
- Child draws a picture and brings to mother. Mother says "Wow that is beautiful"

23

All Reinforcers are Not Created Equal

- Some stimuli are more preferable than others
- Everyone has certain likes and dislikes
- Desire for various stimuli changes from day to day, moment to moment, year to year
- In other words your motivation for things changes

24

Exercise- How is Behavior Altered?

- Just finished snack
- Just drank bottle of water
- Now lunch time, earlier skipped breakfast.
- All day without watching a movie
- All day playing on computer.
- All day riding bike around neighborhood.

25

Where do we go from here?

- Understanding Motivation is essential to teach new skills.
- What do we need to teach to children?
  - » Language
  - » Play Skills
  - » Social Skills
  - » Academic skills

26

How do we get started?

- Build a relationship with your student!!!!!!!!!!!

27

How do we Build a Relationship?

- Pair ourselves with Reinforcement

28

THE GOAL OF PAIRING WITH REINFORCEMENT

- The goal is for the student to like being with the teacher and to approach him or her as soon as they come into a classroom
- Be sure this happens before you place any demands on the child

CONDITIONED REINFORCER

29

Six Steps to Remember when Pairing Yourself with Reinforcement

- STEP 1: IDENTIFY REINFORCERS
- STEP 2: APPROACH THE CHILD WITH SOMETHING FUN
- STEP 3: MAKE SURE THAT WHAT YOU HAVE IS MORE DESIRABLE
- STEP 4: MAKE ACTIVITIES MORE FUN
- STEP 5: PAIR YOUR VOICE WITH REINFORCEMENT
- STEP 6: LIMIT THE AVAILABILITY AND VISIBILTY OF OTHER REINFORCERS

30

Identifying Reinforcers

- The only way to know for sure if a stimulus is a reinforcer is if it increases the frequency of a behavior. But here are some questions that may help you to select items that are likely to be reinforcers. Give the child free access to a variety of items that may be reinforcers and observe behavior.

31

Identifying Reinforcers (Cont.)

- List every thing that the child likes to do. Everything. Even if it is odd you should put it on the list. These are all possible reinforcers.
- Remember when presenting different items that may be reinforcers, to present many different combinations of choices. Sometimes an item is a reinforcer but in the presence of something that is more reinforcing the child will not choose it. Many times it is then assumed that the item is not reinforcing when in fact it is a reinforcer.

32

How to tell when something isn't a reinforcer and may even be aversive to your child

- Does the child become upset when certain items or activities are presented?
- Does the child attempt to avoid certain individuals, places, activities, or items?
- Does the child attempt to escape certain places or activities?
- There will be some items and activities that the student has no history with and those stimuli will be neutral.

33

What to do if Child is not Taking Offered Items

Ask yourself:

- Does the student have access to these reinforcers at other times during the day?
- Can the student access these reinforcers without help?
- Can the student access these reinforcers through other people (e.g., in home or school)?
- In the past has demands been placed on this item? If so it may be aversive when delivered by adults.

34

Pair Yourself and Your Voice with Reinforcement

- Deliver reinforcement to the student frequently
- Deliver reinforcement when the student approaches you.
- Deliver reinforcement before the student has an opportunity to engage in inappropriate behavior. The student should not wait long for reinforcement. The student should be able to access reinforcement with little effort in the beginning. This ultimately will make you a reinforcer and your presence reinforcing.
- During pairing activities talk to your student frequently so that your voice becomes a conditioned reinforcer. But do not give the student instructions.

35

Pairing Toys and New Activities as Reinforcers

- Select toys that your student has some interest in (if possible) but does not play with appropriately or for extended periods of time. Or if your student does not show interest in a particular toy select a toy that you would like him or her to play with.
- Entice the student to play with the item by playing with the toy yourself. Your play should be animated. If the student approaches you and the toy present a reinforcer immediately. If the child wants the toy (reaches for it) give it to him.
- If you cannot entice the student to look at the toy try holding out the toy and if the student approaches and takes the toy present a reinforcer immediately.

36

Pairing New Toys (cont.)

- Once the student readily approaches the toy begin providing reinforcement contingent upon continued engagement, manipulating the toy, attending to you as you model actions with the toy, attempting to imitate actions, incorporating novel actions, or vocalizing during play. Reinforcement should be given frequently for each specific action done with the toy and presented immediately following the action.
- Over time the reinforcers should be faded so that novel actions or extended play are the only things reinforced. And, finally reinforcement should be faded as the toy and play activities become conditioned reinforcers.
- You will know if the play or activity is a conditioned reinforcer if the child seeks the item or activity during his or her free time

37

Why have we been less than successful in changing behaviors?

- Often have difficulty identifying the true cause or function of the behavior
- Interventions or strategies are often implemented inconsistently and there is no monitoring or evaluation of the implementation
- Consequences have been more punitive than positive

38

Why Do An FBA? School's are required to, should parents?

- Two basic assumptions:
  - **We can better address behavior problems when the cause or function of the behavior is known**
  - **Positive strategies or supports are more effective than punitive strategies**
- Identifying underlying causes (what student "gets" or "avoids" helps to develop interventions)

39

Why Do An FBA? (continued)

- We need to identify all factors (biological, social, affective, environmental) that either initiate, sustain, or end the behavior
- Remember that the functions of behavior are not inappropriate – the behavior is what is appropriate or inappropriate

40

Why Do An FBA? (continued)

- It is our job to find a way to meet the student's need for attention, escape, avoidance, power/control, etc., by teaching appropriate replacement behaviors that serve the same function as the inappropriate behaviors

41

How do we do an FBA?

1- Describe and verify the seriousness of the problem.
2- Refine the definition of the problem behavior.
3- Collect information on possible functions of the problem behavior
4- Analyze information
5- Generate a hypothesis statement regarding probable function of problem behavior
6- Test the hypothesis

42

FBA in a nutshell

- There are 3 major functions of all behaviors:
  - To obtain something
  - To avoid something
    - » Socially mediated
  - Automatic behaviors
    - » Self-stimulation

43

What can I do to reduce the behavior?

- There are 3 ways to reduce the behavior
  - Eliminate the motivation
    - » Replace the behavior
  - Terminate the reinforcement
    - » Extinction
  - TEACH a replacement behavior
    - » Provide alternatives

44

Function	Method	Example
Obtain Something (Bother mom while she is talking on phone)	Eliminate Motivation	Give child lots of attention when the child is behaving appropriately
	Terminate Reinforcement	Ignore behavior and be patient (the behavior increases temporarily) (do NOT attend)
	Teach	"you cannot talk to me right now, but you can play with this puzzle (or sit and wait) until I get off the phone"
Avoid Something (Watching TV instead of doing homework)	Eliminate Motivation	"Give the child more motivation to complete the homework by giving him/her reinforcers when he/she is finished" (or evaluate effort of the task)
	Terminate Reinforcement	"you can sit in time out or you can finish the homework, what do you prefer?"
	Teach	"Let me teach you how to do the homework step by step"
Automatic Behavior (Rocking back and forth)	Eliminate Motivation	Provide an enriched environment by providing incompatible activities
	Terminate Reinforcement	Physically block the behavior
	Teach	Find a more socially acceptable situation to express behavior (rocking chair, cotton balls on pencil for tapping on the desk)

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Let's Review and Tie This All Together

- Antecedents: the events that occur before a behavior is exhibited.
- Behavior: the specific observable behaviors exhibited by children. Some behaviors we want to increase, some behaviors we want to decrease.
- Consequences: if the consequence is pleasing to and desired by the child, the behavior will probably be repeated – if the consequence is disliked by the child, chances are the behavior will not be repeated.

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The Goal of Effective Intervention

- Reduce inappropriate behaviors
- Teach appropriate behaviors to replace inappropriate behaviors
  - For example: If a child cries when she wants something to drink, don't just teach her not to cry, teach her to communicate this desire by saying, "May I have a drink" or by pointing to a picture of a glass of water, or by signing: drink.

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Positive Reinforcers

- This is when you actually do something to increase an appropriate behavior or to decrease an inappropriate behavior.
  - For example: When your child does something good, you say, "Great job" – or when she picks up her toys and your reward her with a treat she likes, it's likely she will pick them up the next time – for this to work, it must be consistent.

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Reinforcing Behavior

- Let's say that you're having dinner and that the majority of the attention paid to a child is for inappropriate behaviors, "finish your dinner, don't play with your food, etc." The child learns that if she wants attention, all she has to do is misbehave – children feel that attention (for good or bad behaviors) is better than no attention (neglect)
- So, if you're giving attention to the child when she does the behaviors your desire, they will increase: "Good job eating, good job sitting up straight, etc."

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Types of Positive Reinforcers

- Primary Reinforcers: juice/water, apple slices, crackers, carrot sticks, cheese, pretzels, popcorn, etc. (avoid foods high is sugar and caffeine)
- Social Reinforcers: praise "You did a great job!" "Excellent!" "You're such a good worker" "I'm very proud of your" smiles, gesture with thumbs up, hugs, pats, etc.

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Types of Positive Reinforcers (cont.)

- Material Reinforcers: stickers, pictures, posters, bubbles, silly putty, baloons, toy jewelry, etc.
- Activity Reinforcers: play a game (especially with an adult), listen to music with headphones, computer time, watch a video/tv, arts and crafts, etc.
- Token Reinforcers: points, play money, stickers, stamps, plastic chips, legos, etc.

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Extinction

- This means to withhold reinforcement (usually attention) for a behavior that was previously reinforced. When the behavior occurs, you do not look at the child, you do not say anything to the child, and you might move away from the child – perhaps to give attention to another child who is behaving appropriately.
- With extinction, behaviors often increase before decreasing (tantrums, etc.)

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Consequences for Inappropriate Behaviors

- If the child does not follow an instruction, and you feel confident the instruction has been understood, firmly repeat the instruction (or "No")
- Time out (exclusionary-nonexclusionar)
- Response cost
- Presentation of an Aversive Stimulus
- Overcorrection

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Think Outside the Box

- It is necessary to get creative:
  - For example: A child does not want to run the vacuum cleaner, but really enjoys listening to music with headphones – the child may wear the headphones while using the vacuum cleaner.

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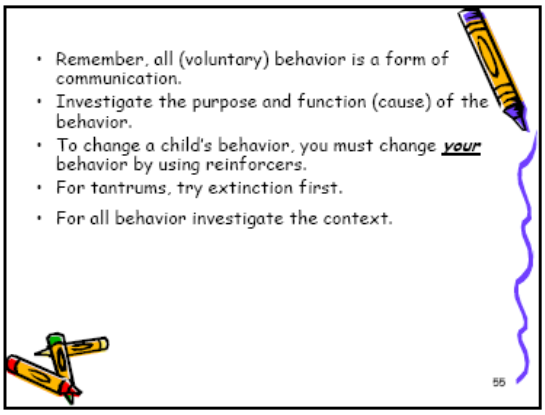
• Remember, all (voluntary) behavior is a form of communication.
• Investigate the purpose and function (cause) of the behavior.
• To change a child's behavior, you must change ***your*** behavior by using reinforcers.
• For tantrums, try extinction first.
• For all behavior investigate the context.
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